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Established 1914

CHEMICAL INDUSTRIES

Vol. 41 Dec. 1937 No. 6

Published monthly and entered as 2d class matter Dec. 22, 1934, at the Post Office at New Haven, Conn., under the Act of March 3, 1879. Subscription, domestic and Canada, $3 a year; foreign, $4.

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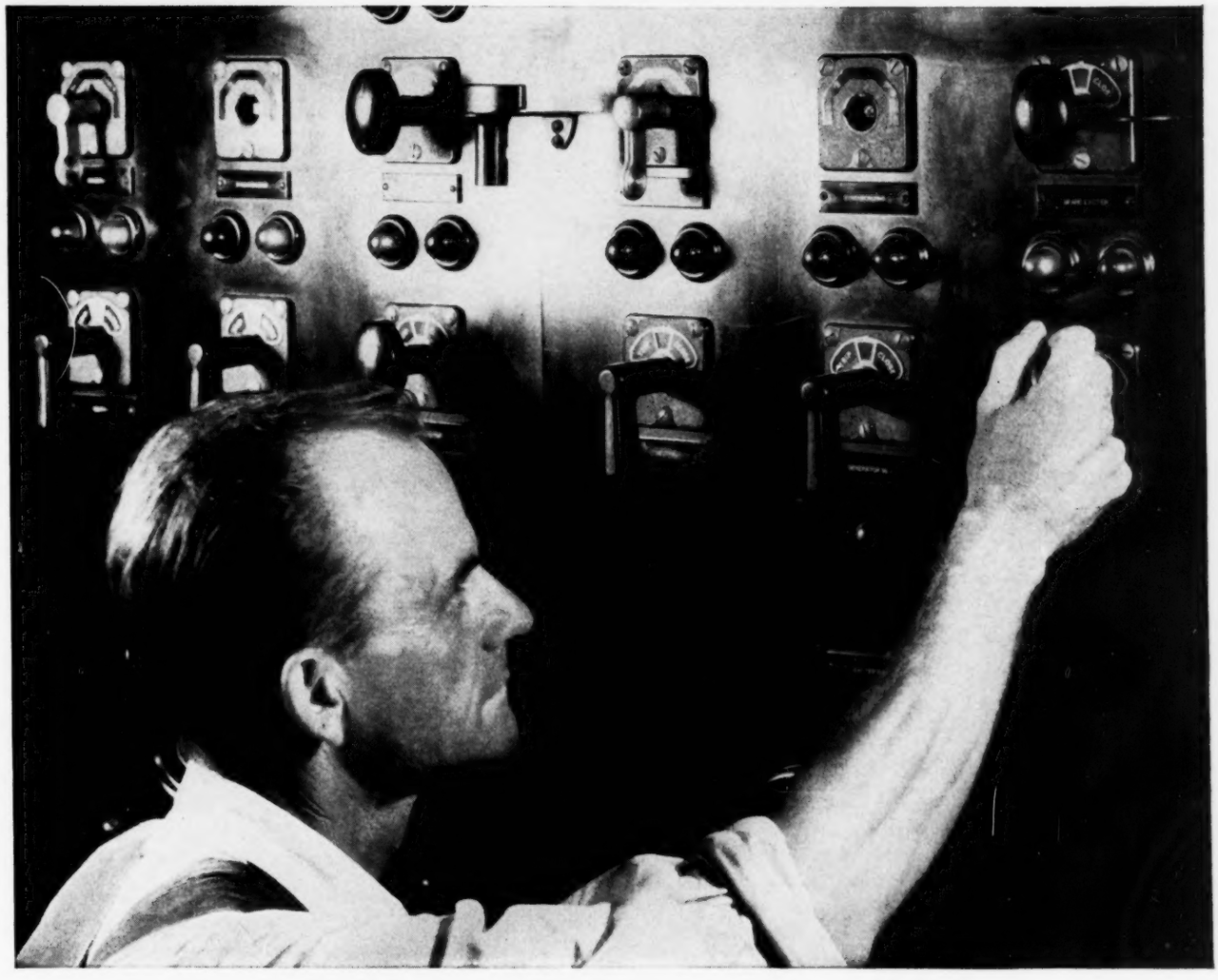

The More Power to Him!

A CHANCE visitor might attribute C. J. Dorst's passion for keeping everything "just so" to temperament or to plain fussiness. But as power plant operator at Mathieson's Lake Charles plant, Dorst's job carries responsibilities which call for precisely this sort of thoroughness.

For not only must power service throughout Mathieson's plant be continuous. Its output must be closely controlled; voltage and frequency must be kept within narrow limits; generators must be accurately synchronized. Only in this way can Mathieson take full advantage of the low-cost raw materials and fuel at Lake Charles, and translate these into outstanding quality for its products.

Mathieson's generating equipment at Lake Charles comes as close to perfection as the rest of the units in this modern alkali plant. Yet all this equipment would mean little to you were it not for the supervision of men like C. J. Dorst. In large measure, it is these men—faithfully handling hundreds of "big little" jobs—who make Mathieson an organization to which you can look with unwavering confidence.

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Mathieson Chemicals

The Reader Writes:—

International Suckers

Forty I. G. chemists and chemical engineers are now on the high seas after having visited a score of our important plants. Forty picked technical men from du Pont, Carbide, Allied, Dow, and Monsanto ought to follow them to Germany on the first possible boat and return their friendly call. Our visiting technicians would be cordially welcomed and freely shown the German chemical industry's museums, cafeterias, and shower baths!

Newark, N. J. HAROLD LUMM

Four Failings

The writer has been very much interested in the series of articles "Why Chemists Get Fired." As one responsible for the selection and administration of over one hundred chemists engaged in research and technical development, the statements of others in similar positions have been particularly enlightening. Some time before these statements appeared, I had jotted down for my own use what appeared to me to be the primary difficulties of young technical men in industrial laboratories, and I pass them on to you for what they are worth.

Observation over a period of years of young men engaged directly from the scientific schools of our Universities and Colleges for research and development in an industrial laboratory, has indicated four primary weaknesses, one or more of which are likely to be found in the graduate. Some of these undoubtedly are inherent in the individual and not likely to be corrected in the four or more years of scientific training; others perhaps may be the result of that training. The following are the four weaknesses referred to, listed in the order of their importance:

1. Inability to visualize the scope of problems in research or technical development and to select the most vulnerable points of attack that will lead to the quickest solution of the problem; in other words, to ferret out its real meat and get to it by the most direct route. This difficulty is frequently apparent even in men with advanced training and who obviously are well grounded in the fundamentals of their science. They find difficulty in applying the basic principles learned in the University to the problem at hand. It is felt that this phase is somewhat neglected in the student's training and that more frequent and direct contact of the University staffs with the problems of industry would be desirable.

2. Inability to write a concise and readable report, or express one's self clearly in conference with non-technically trained men. No matter how well the laboratory work is done, much of its value may be lost if the results are not made clear to those in executive positions who must make decisions based upon the findings of the laboratory. In most cases this is attributable to lack of practice in composition and grammatical construction. Present science courses in this country frequently stress science at the expense of English, permitting the student to graduate with but one year in English. This, we consider a fundamental mistake.

3. Lack of personality and ability to sell himself or his ideas to others. A colorless personality, of course, does not necessarily interfere with a graduate's ability to carry on research work, but it does seriously interfere with his ability to impress others with the value of his observations and discoveries. It is likely that the pursuit of science is prone to develop a degree of individualism in a man as contrasted with other fields in which human relationships are more thoroughly stressed. The attempt of schools to introduce a number of courses in applied science in under-graduate study has limited the time that should more properly be devoted to the humanities. After all, the proper study of man is man.

4. Inability to combine speed with accuracy in laboratory technique. This, of course, is something that comes only with practice and it is probably asking too much of the technical school to develop this trait in the individual. It is probably something that must be expected in the recent graduate and therefore is up to the industrial laboratory to correct after employment.

It has been interesting to me to see how in close agreement some of the above thoughts have been with those expressed by those writing in your September and October issues.

Maywood, Ill. R. H. LUECK
Mgr. Research Dept., American Can Co.

See Dr. Grosvenor's Article

Your editorial on patents is quite correct in that the rights of a patentee are more and more difficult to sustain in court; but this, in my opinion, is because big companies with unscrupulous attorneys have found it cheaper to infringe than to invent.

Newton, Mass. S. S. LEACH

We Wish So Too

Your honesty is as refreshing as a cool breeze in August and your courage is as warming as an open fire in January! Your market reports and editorials come out boldly and say "business is not so good." All the other chemical journals are avoiding this fact and following the tragic Hoover policy of trying to create the impression that conditions are sound when all of us know that they are shaky.

Often I don't agree with you, but I won't soon forget that three years ago you warned that business alone was big enough to pull us out of the slump when at the time I believed the Government could and would do it. You were right and I and hundreds of others were wrong, so here is my renewal subscription for the next three years. This, I know, won't repay you, and I wish I had something to warrant advertising in your pages.

Evanston, Ill. HENRY P. WISBACH

Prospects of Inflation

At various times I have written in the *Givaudanian* that it is impossible to create an inflation in the United States at the present time because inflation has as its basis a demand for commodities far beyond present or visible supply. Such a demand can be created in two ways: first, a demand due to a wave of prosperity and then, it is a normal prosperity inflation: a demand due to the lack of confidence in the money we have saved and a desire quickly to transform it into commodity assets.

Number One Condition naturally cannot occur as long as you have millions of unemployed who can be pressed into production if the necessity or the demand justifies it.

Number Two Condition certainly does not exist so long as the Government can obtain money at a very low rate of interest. The first indication of a possible money inflation would be when the Government's borrowing power seems to be impaired.

Today, my ideas on this subject are fully vindicated and contrary to the speeches made by such eminent economists as Prof. Kemmerer, Prof. Sprague, and the many pamphlets distributed by Babson, etc.

New York City ERIC C. KUNZ

TEXTILES

Raw stock dyeing at the plant of Bigelow-Sanford Carpet Company.

Chrome mordanting in raw stock dyeing with Mutual Bichromates is standard practice by many of the most exacting colorists in the textile industry. We are proud of the good-will which has been earned during the many years in which we have served this industry.

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OF ALL the forces that speed industrial progress none is more potent than chemical research. With special knowledge of inter-related materials the chemist makes his presence felt in nearly every line of production.

—ALL ALONG THE LINE

Research in one industry often uncovers a new material or a special process that can be used in another—or many others. For example, a product developed for the textile industry is found to have revolutionary effects when used in the tanning of leather. This is typical of the trend. Many such products, once narrowly limited in use, are now being turned to profit in widely diversified fields of production.

Cyanamid supplies chemicals for almost every purpose, and assists in their correct use. Our research staff and technicians have thus accumulated a fund of knowledge and experience that is passed on to the manufacturers we serve. In the right-hand column are listed a few Cyanamid products that are helping manufacturers find faster ways to reach new markets.

AERO* BRAND PHTHALIC ANHYDRIDE—Available for prompt shipment. Averages over 99.9% pure. Exceptional freedom from odor and color-forming impurities assured by our patented process of fractional sublimation—made in the world's largest Phthalic Anhydride plant.

AERO BRAND AQUA AMMONIA 26° Bé—The high standard quality of our Aero Brand, Water White, Aqua Ammonia makes it particularly suitable for such industries as the Textile Industry, the Rubber Industry, the Oil Refining Industry, and for bottlers and other users.

Our producing works at Warners, New Jersey, are so equipped as to render our customers immediate shipment via rail, boat or truck.

****REZYL 775-1** (50% in mineral spirits) is suggested particularly for air drying and low bake colored enamels and pigmented undercoats for trucks, lawn furniture, toys, machinery, signs, and gasoline pumps. It combines good gloss and hardness with excellent working properties and resistance to water, alkali, alcohol and oil.

WOOL OILS—For oiling wool stock prior to carding. These Wool Oils are light in color, form perfectly stable emulsions when mixed with water, and when applied to the stock distribute themselves uniformly and evenly throughout. They impart the necessary lubrication to the stock to permit easy and uniform carding and spinning and will not gum up the card clothing. These oils are readily emulsifiable and can easily be removed from the fibre during the subsequent scouring and cleansing operation.

RAW MATERIALS—We are producers and distributors of basic raw materials for many industrial uses. Call on us for Bauxite, Blanc Fixe, Clay, Mica, Mineral Colors, Natural Resins, Sago Flour, Tapioca Flour, Waxes, Whiting.

Watch this column monthly for the announcement of other interesting Cyanamid developments. Technical information on these and other Cyanamid products is available on request.

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- . . . . produce foam
- . . . . increase detergency
- . . . . rinse out readily
- . . . . increase spreading

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Unit of Union Carbide and Carbon Corporation

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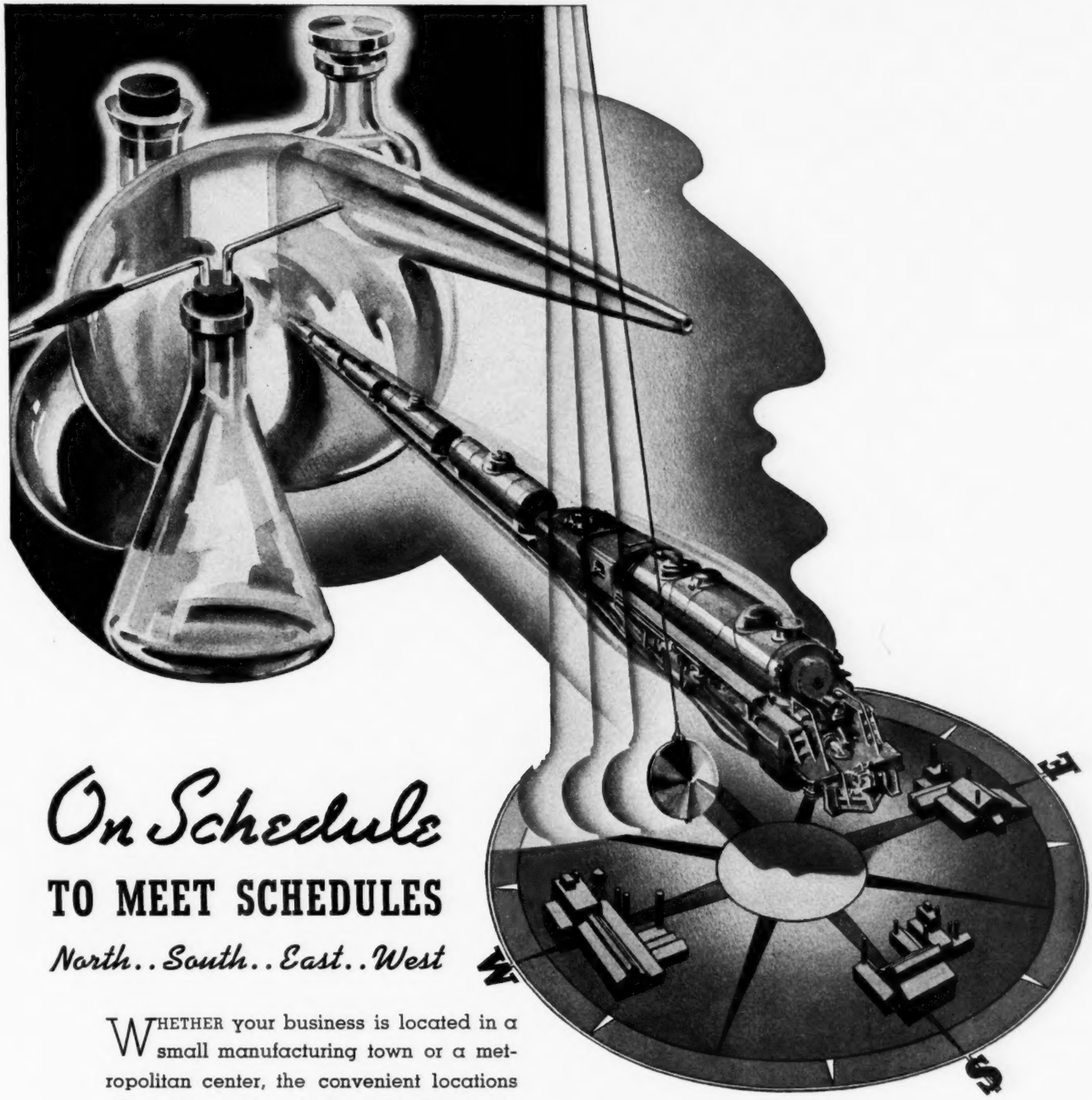

On Schedule

TO MEET SCHEDULES

North..South..East..West

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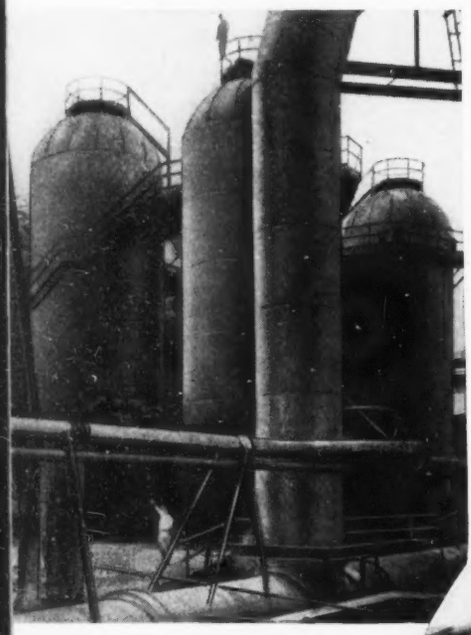
GRASSELLI CHEMICALS

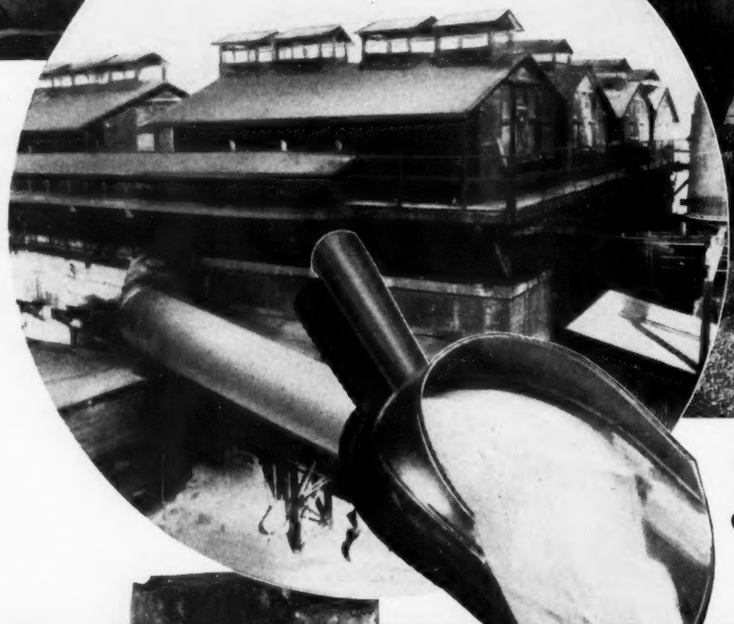
FUEL FIRED FURNACE

1 Phosphorus is found in the form of phosphate rock in the states of Tennessee and Florida. Selected Tennessee deposits are mined and shipped to the nearby Nashville plant of the Victor Chemical Works . . .

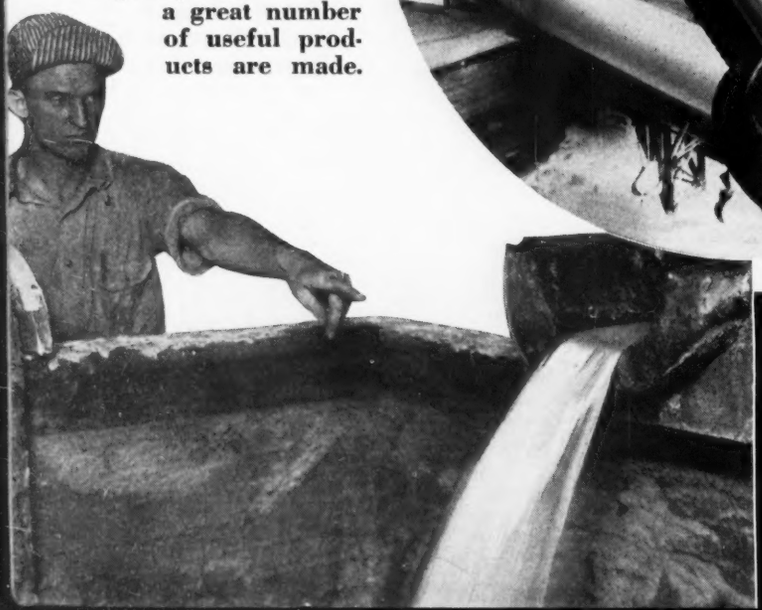
2 . . . where the phosphate rock is smelted in a gigantic fuel-fired furnace by a special process developed by Victor engineers. Electric furnaces also are used for smelting the rock. The elemental phosphorus is released as a gas . . .



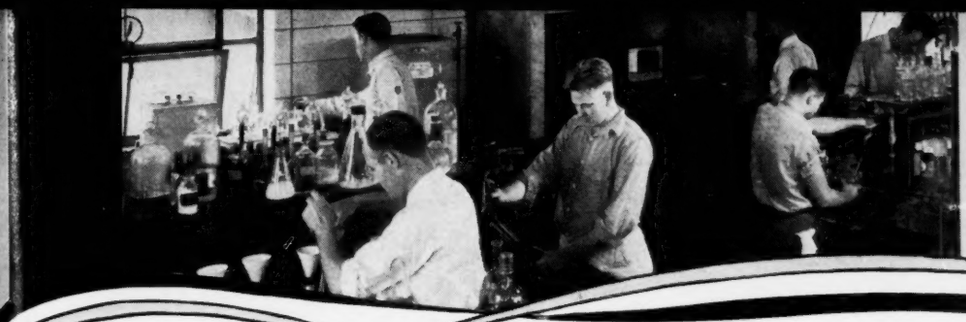
3 After thorough purification this gaseous phosphorus is subsequently oxidized or burned in massive stoves to form phosphorus pentoxide . . .

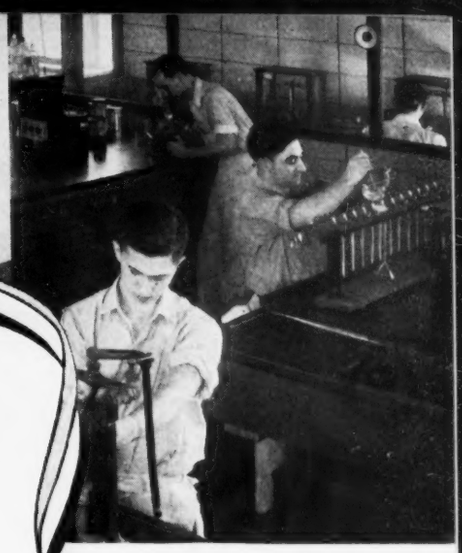


4 . . . which in turn is "hydrated" or dissolved in water; then precipitated by electrical precipitators, thus producing phosphoric acid of high strength and purity from which a great number of useful products are made.



5 By combining the purified phosphoric acid, for example, with a calcium compound, mono-calcium phosphate is produced . . . typical of the many important phosphate products of the Victor Chemical Works. For others, see opposite page.





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AND ITS COMPOUNDS

***Manufactured by the* VICTOR CHEMICAL WORKS**

Contributions to Industry and Our Every Day Life

That the Victor Chemical Works in the brief space of thirty-five years has become the world's largest producers of food grade phosphoric acid and its salts, may largely be credited to never-ending research. Over eighty chemists and engineers are constantly at work in the Victor laboratories.

PHOSPHORIC ACID, while serving essentially as the basic material from which practically all phosphates are made, is used directly in many industries . . . such as the manufacture of beverages, jellies, vinegar and in the rust-proofing of metals.

MONO-CALCIUM PHOSPHATE . . . indispensable in the kitchen . . . is found in phosphate baking powder, self-rising, biscuit, pancake, and other prepared flours.

DI-CALCIUM PHOSPHATE. Used in health foods, it compensates for recognized calcium and phosphorus deficiency in the average diet. Serves also as a polishing agent in tooth paste or powder.

TRI-CALCIUM PHOSPHATE is a boon to salt and sugar. Prevents caking.

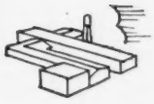
MONO-SODIUM PHOSPHATE is widely used in the treatment of boiler waters.

DI-SODIUM PHOSPHATE gives "body" to silks.

TRI-SODIUM PHOSPHATE because of its emulsifying and detergent properties is one of the best cleaning compounds known.

SODIUM ACID PYRO-PHOSPHATE is used as a baking acid by commercial bakers.

MONO - AMMONIUM PHOSPHATE prevents fires . . . is widely employed in fire-proofing both wood and textiles.



PHOSPHORIC ANHYDRIDE is used as a drying agent and catalyst.

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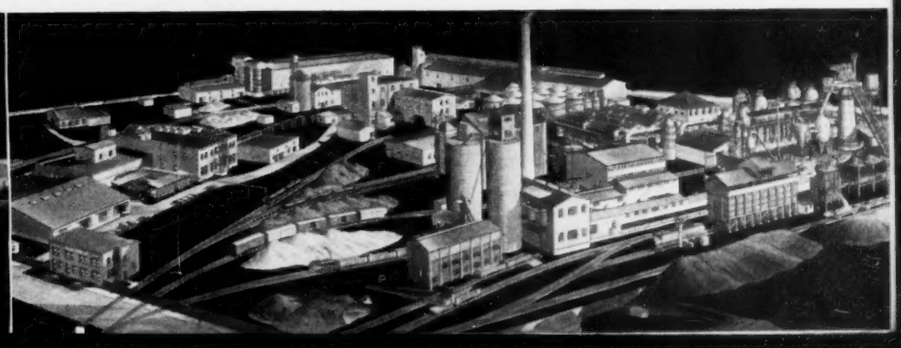

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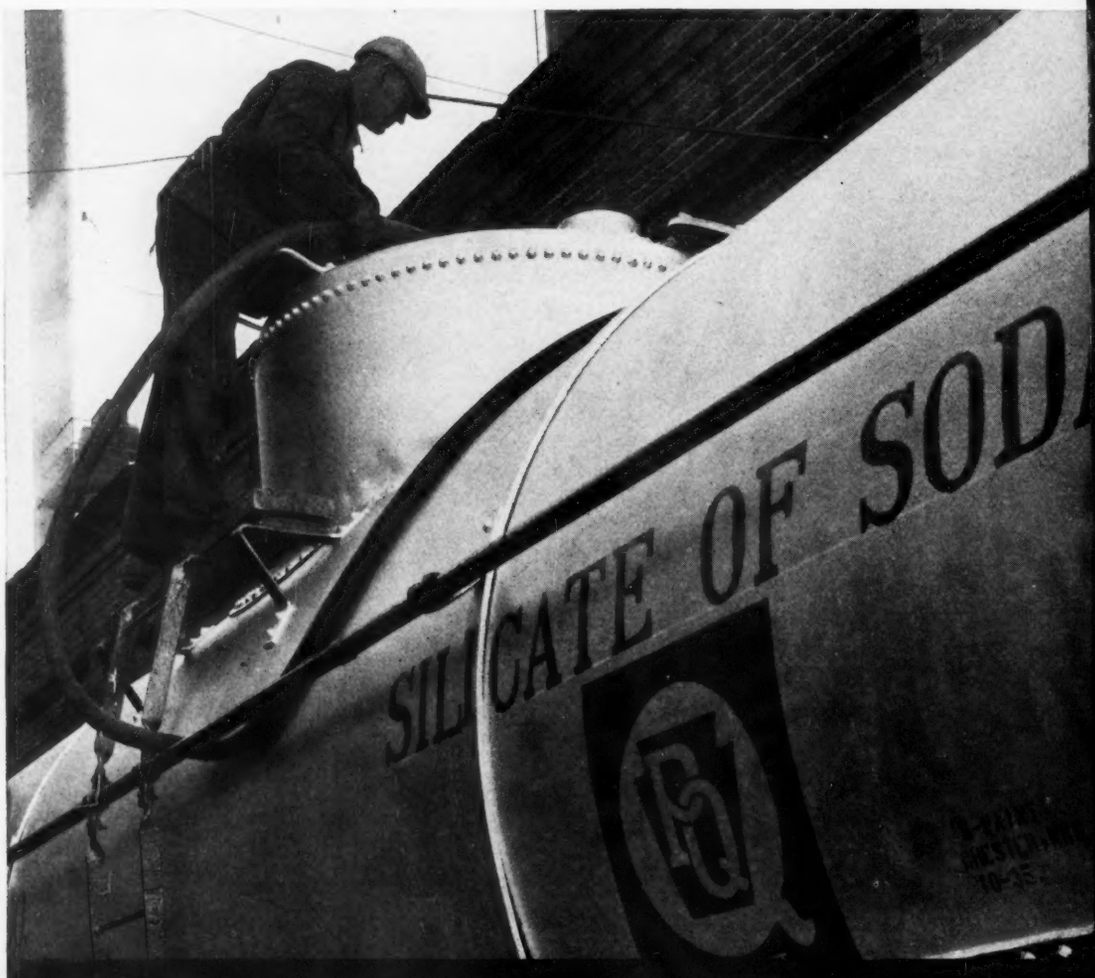

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Compare the values of your "ideal" bichromate specifications with the figures from an actual analysis of our product. So much of this, not more than a certain per cent of that—and so on down the list. Item for item they will parallel.

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CHEMICAL INDUSTRIES

The Chemical Business Magazine

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Conserving Chemical Resources

OF all the contradictions of these contradictory times none is more glaring than the proposal to exploit the western phosphate deposits by means of a subsidy from a Government whole-heartedly committed to the conservation of natural resources and particularly of agricultural resources. It would be difficult to devise a program to furnish quite so perfect an example of uneconomic waste for the benefit of a few in the present at the expense of many in the future. This is a public crime of the identical character for which private individuals are roundly castigated.

We go a long way with the lamented John Teeple in his baldly realistic view that there is much poppycock in any talk of conserving chemical resources. At best we cannot dream what chemical raw materials our grandchildren will need. At worst we may be sure that their chemical ingenuity will not be less than ours and that they will be fully capable of providing their own substitutions. But, though the element phosphorus is widely and abundantly provided, nevertheless its use is vital to food production, and its use in this field is plainly to increase rather than diminish.

Our own phosphate needs (with an exportable surplus of over a million long tons of rock) are provided by the Florida and Tennessee fields. Both are close to our chief consuming area and the former is literally on the seaboard. Accordingly, Florida phosphate may be delivered on the West Coast more cheaply than from Utah, Idaho, and Montana, and it has not been ignorance of the extent or richness of the western beds which has kept our superphosphate producers from locating plants there.

Two safe forecasts of future fertilizer development are that the center of consumption will move westward and that transportation will become quicker and cheaper. It would therefore seem to be the soundest of common sense to exhaust if necessary the fields now worked commercially and to hold in reserve those rich deposits that today it is not economic to work save at the expense of the tax-payer's pocketbook.

As Others See Us

In picking from the intricate tangle of chemical technique and chemical commerce so interesting and understandable a story, *Fortune* has done a conspicuously good job for which they well deserve the congratulations of the entire chemical industry. More than that they deserve our thanks for the skill with which they have distilled the very essence of our development since the World War and the art with which they have made clear our philosophy of progress through new products, better goods, and lower prices.

A Quixotic Proposition

It is hard-headed sense for our universities to encourage their chemical and chemical engineering faculties to engage actively in industrial work. Such contacts with chemistry that must earn its living in overalls is a wholesome experience for teachers which cannot but have wide, beneficial, practical influence upon their students.

But it is hard-hearted injustice for our universities to promote research and consulting work by their staff upon terms that their own alumni, who are practicing chemical or engineering consultants, cannot afford to meet. This particular type of unfair competition is properly emphasized in the restrained report on this subject recently made public. It is the most pernicious and yet at the same time the most excusable abuse of ethics in the chemical profession.

The cure is simple. For the use of university time and facilities the institution is perfectly justified in collecting from any staff member half of all fees earned for outside work. This percentage would no more than put the faculty man on an even financial basis with the independent consultant who must pay rent and wages and buy his own equipment and supplies.

Even were these fees devoted by the universities to pension funds, endowed professorships, or scholarships this proposal will not have cordial support within educational circles. Our professional chemical and engineering societies therefore, would be well within their prerogatives if they were to organize sentiment among all alumni and bring pressure from the outside. The industry itself, if awakened to the importance of supporting its disinterested advisers, might lend a hand by bestowing its gifts and fellowships only upon those institutions which in this way kept professional good faith.

Contract Forecast: Fair and Warmer

The 1938 contract period contrasts sharply with the preceding one. A year ago commodity prices were rising rapidly: for the past few months the decline has, in many instances, been sensational. Then large inventories were an asset: at the moment they are a liability. Last year higher labor costs were largely academic and no upward revision of freight rates was imminent. Despite these disturbing conditions chemical prices (excepting the metal salts and pigments, which are closely hitched to ups and downs in the metals themselves) display a comforting stability.

The carbon black "battle" could hardly have been averted in view of increased capacity and less consumption. Soda ash carload quotations have been stiffened while those for caustic remain unaltered, not a strange situation since ash has been firmer than caustic for years. The l.c.l. price structures for both have advanced 10c, satisfying to a degree at least, the contention that the "spread" to c.l. prices has not been as great as it should. "Bicarb" is up 10c indicating a firmer price attitude than has prevailed in the past. Bichromates will cost ¼c per pound more. Producers are paying more for sulfuric, will pay more for ash in '38, and are faced with additional stiff increases in chrome ore freight rates.

Acetone has reached a new low in a highly competitive market. The number of producers has increased and more butyl alcohol has necessarily added greater supplies of acetone. Chlorine quotations remain unchanged. Many looked for a rise, but increased productive capacities by present producers and announcement by two more alkali makers that they will enter the field shortly exerted a deterring effect.

Many prices for '38 still are unannounced, notably in coal-tar chemicals, solvents, and raw paint materials. Heavy exports in the first stoutly support the price structure and with curtailed coking no unwieldy surpluses appear likely. With ocean freight rates twenty per cent. higher, imported materials must of necessity go up unless the bottom drops out of the market.

Encouraging to seller and buyer alike is the perceptible change in attitude developed within the past ten days or two weeks. Belated but very welcome appreciation in Washington of the necessity of cooperation with industry has engendered confidence and a willingness to consider next year's chemical requirements no purchaser displayed a month ago. A little more definite encouragement and business would be good.

Francis P. Garvan

13 June 1875
7 November 1937

Born in East Hartford, Conn., son of State Senator Patrick Garvan; a graduate of Yale in 1897; New York Law School, LL.B., 1899; began the practice of law in New York City that year. Assistant District Attorney under William Travers Jerome, 1902 until 1910; returned to private practice, and at the outbreak of the World War served as a Dollar-a-Year Man in the Bureau of Investigations, succeeding A. Mitchell Palmer as Alien Property Custodian. Suggested administration of the German chemical patents as a public trust to President Wilson, and became President of the Chemical Foundation. Ably supported a self contained American chemical industry, higher chemical education, researches in cancer and the common cold; the publication of Chemical Abstracts, *and numerous chemical scholarships, and the Farm Chemurgic Council. Honorary A.M., Yale, 1922; LL.D., Fordham, 1919; Trinity, 1935; Notre Dame, 1936. The only layman to receive the Priestley Medal, awarded the Mendel Medal and jointly, with Mrs. Garvan, the Medal of the Institute of Chemists.*

American chemical industry's great friend and champion is dead, and we may all of us be devoutly thankful that during his lifetime we were able to justify his abiding faith in our research, our service, and our products. He cherished the dream of a rounded and efficient chemical industry, and the fulfilment of his vision meant vastly more to him than all the honors he won and is a monument infinitely more fitting and lasting than any tribute we can now pay to his memory.

He was the first American to sense the enormous importance of chemistry in modern civilization and to comprehend that a domestic supply of all chemicals is vital alike to prosperity in peace and to security in war. To the twin tasks of educating his fellow citizens to a true understanding of chemistry's modern meaning and of upbuilding chemical research and chemical manufacture in the United States, he devoted his time and wealth, his heart and head, unstintingly and without recompense for nearly twenty-five years. Being a man of vibrant energy and brilliant ability he was able to accomplish many important, tangible things for these educational and industrial causes to which he devoted himself. Such service as he gave will be sorely missed; but to the hundreds of chemical people who had felt the firm grip of his hand, who knew the twinkle in his blue eyes, who had come to appreciate the jut of his jaw and the pound of his fist when he was thoroughly aroused, his passing means a more intangible but quite irreparable loss. It was his confidence in the American people, his loyalty to his friends; it was the courage with which he backed his convictions and the doggedness with which he followed his ideals; it was his bright optimism, his Celtic wit, his warm sincerity—these are the gifts that he bestowed freely which cannot be replaced.

Though our industry was the focus of his public activities, his influence was strongly felt in many fields. He was a man of numerous hobbies that ranged from showing hackney ponies to collecting early American silver, all followed keenly and to some definite purpose. His alma mater, Yale, and his Church held big places in his generous heart; but one needs to have known him ever so casually to realize that it was his wife and children who were the very lodestone of his life. Their loss is incomparably the greatest and to them the grateful sympathy of the entire American chemical world—chemists and salesmen and plant operators, educators and executives—goes forth in affectionate remembrance of a real man.

Williams Haynes.

What's Wrong with Patents?

By Dr. William M. Grosvenor

RECENT patent decisions emphasize two questions suggested with growing frequency in recent years. One is, why are so many valuable inventions badly protected? The other is, why has not some way been found by which more effective protection can be secured?

Experience and study of the records suggest a possible answer. It may be helpful to state the possible causes and consequences, and to follow this by what may be a remedy. At least, it may start thought and discussion in which wiser heads may offer something better. At most, the remedy suggested may help those who are developing valuable inventions, and wish to protect and enjoy them. Its trial will certainly cost much less than desperate struggling to enforce patents in spite of their weaknesses.

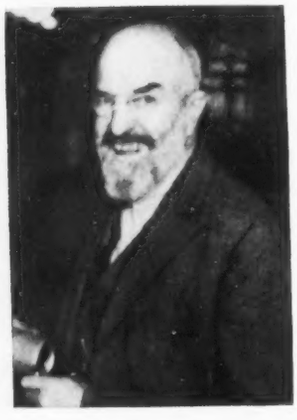
First, what is needed to write the description of a modern scientific invention in patent form? Many things. Among these is a clear scientific understanding of the preceding work of others along similar lines and of the similarities and differences between what is old and what is new. It also needs understanding of the inventor's difficulties in taking those mental and physical steps required to advance from what is old to what is new. Writing a good patent application for an inventor calls not only for enough scientific knowledge and imagination to understand it, but also for enough to suspect and overcome error, and prejudice. It may sometimes need acumen to cross-examine him, or almost bulldoze him, to sift fact from guess, to squelch romancing, or even to overcome unconscious concealment. This demands both critical and financial independence. Furthermore, to encourage the inventor's full confidence and cooperation such work calls for cordial appreciation of the inventor's honest good-will, enthusiasm, and desire to help. But it also demands a well concealed, cold-blooded appraisal of factual relations and hence complete freedom from any pseudo-parental affection for the new idea.

Yet it also needs technical imagination and inventiveness on the part of the specification-writer, giving him the ability to suggest possible omissions, equivalents, or alternatives that might be means of avoiding apparent infringement. It may require shameless courage to submit and argue such suggestions as these, and to compel their serious consideration as possible parts of the patent's expressed or implied teaching.

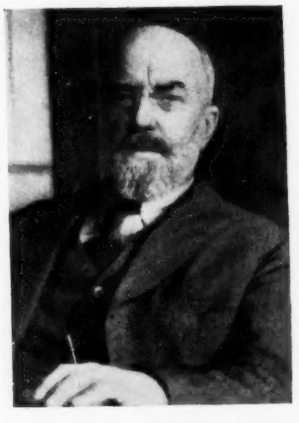
This is a large order for one man. However, it is only the outline of abilities needed for the mere gathering of the raw material for the story which is yet *to be* told. The proper telling calls for other and quite different things. Among these are knowledge of the rules of the Patent Office, as well as general and particular knowledge of how the patent examiner's mind works. Meticulous care must be taken in checking every single positive statement. By no means least is that rare asset: command of simple, clear, unequivocal English. Any phrase of doubtful meaning is sure to be interpreted against the patentee by the defendant, and possibly by the Court.

Rarer abilities which can be very valuable include a general acquaintance with pertinent theories of the particular science and art, wisely and guardedly applied to suggesting in the specification a broader teaching by the patent. Also in this group falls the *human* ingenuity which so frames the specification as to invite the examiner's sympathy to get his cooperation and assistance in defining the broadest scope of the invention. Similarly, it is helpful (when safe) to produce the inventor and, if possible, to demonstrate the invention to the Examiner, perhaps on a commercial scale.

Finally comes a series of qualities or abilities that are difficult to distinguish or define sharply. They might be called judgment, intuition, the fruit of experi-



The percentage of technically sound patents which fail to survive litigation has during the past years become greater and greater, to the staggering losses of patentees, and the growing confusion in a number of important fields of chemical enterprise. One of the country's foremost chemical patent authorities, with wide experience in preparing patent cases and an outstanding position as a chemical expert witness, Dr. Grosvenor's hard-headed, outspoken analysis of this situation is a virile and valuable document.



ence, and that most uncommon one, common sense.[1] They develop only with experience in dealing with inventors and inventions, in Patent Office practice, in preparation and trial of cases, in the study of court records and the preparing of briefs and arguments. They may sometimes amount almost to prevision of what is going to happen to a patent—sometimes even just why and how it will happen. These also are among the needs for writing applications.

Experience the Priceless Ingredient

Where are all these abilities to be found? Rarely, if ever, are they all found in one man. They are almost never found together in any group of men who have all been trained in any one profession, even in patent law, and rarely in any group of men who are all under fifty. Age and experience give wise counsel.

Formerly, most individuals and corporations sent their inventors to the lawyers who took care of their patent work, litigation and all. Many old patent firms comprised several men trained in general science as well as the law. The head of the firm was usually over fifty, and his advice was always available to his juniors. As the years went by, this firm came to know the client's personnel and business pretty thoroughly. They soon became astonishingly well acquainted, not only with the methods but also with the underlying sciences of their more important clients' work. Knowing so much about the work of some clients, they quickly recognized any deficiency of their own for the work of another client, and were quick to correct it by hard, intensive study, or by consulting a technical expert.

This was natural for the independent firm of patent lawyers who both prosecuted applications and litigated patents. They generally brought to the work a keen recognition of its various requirements and a lot of practice and observation of the experience of others in trying to meet all of these requirements. Much had been learned by hard experience and criticism from their elders during the years of their subordinate membership in the firm. As a rule, these men early acquired independent and more or less dominant personalities, trained to combat the motions and arguments of opposing counsel. They were trained by office and court experience to winnow the grains of truth from the chaff of error, prejudice, and in Court, even of adroit dishonesty. Thus their preparation for the entire group of requirements, from inventor to Court of Appeals, was fundamentally broad and far advanced under the teaching and criticism of masters in the art.

Most important of all was the fact that they had little inducement and less chance of putting up any "false front" to gain favor with those who controlled their jobs and fixed their salaries, but who did not know and understand every detail of their work. Under the eye of a sympathetic and hopeful, but critical master, anxious for the best assistance, they had to do their utmost to make good in open competition with other equally experienced counsel before that critical master or an impartial Court. But they did have the chance to learn and practice simultaneously, under a wise old "chief" equally anxious to help, whether by criticism or by praise. Knowledge was thus gathered from many sources. It was tested by much and varied experience in which mistakes were visited upon their own heads without fear or favor. The tested residue of truth thus gleaned was compared and digested for real enlightenment. Practice in following such light liberated judgment from desire, impulse or prejudice, bringing freedom and wisdom—*the ability to discern and judge soundly between the true and the false.* Such were the men who used to plan and help prosecute important patent applications.

But times have changed. Large corporations increase and multiply. Today the patents for many valuable inventions are drawn up and prosecuted to issue by corporation employees in the corporation's own patent department. This is done partly for convenience and partly to save expense. Rarely, if ever, has any one of these men had much experience under the critical eye of a master in the broad combination of particular sciences with practical arts here involved. Rarely, if ever, has any one in the patent department followed again and again the product of his own work from the inventor's disclosure through to the end of its trial by fire in the courts, and done so under the guidance and critical advice of one who was both master of the arts involved and also independent member of his own firm, fearing no critic save the final test in open court.

The System—Not the Men—to Blame

It must be emphasized and remembered that in general, no fault lies with these men of the corporation patent departments or their officers, but with the system. A large amount of work good enough to win approval of associates and superiors is easier and much more satisfying than a small amount of painstaking work that is perfect beyond criticism. For the few almost invaluable patents, such perfection is none too good, but no competent authority is on hand to decide when and to know how to apply it.

When an invention is made, under the system the inventor must to some extent direct the preparation of his application, working either with the head of the patent department or an assistant. The inventor may be a man of importance and authority, or a modest nobody, anxious to get back to his job and invent some more. The department head must spread himself thin over many matters, some of little importance. He *must* look after department administration to get out the volume of work at reasonable cost. Much work, possibly important, must be left to assistants.

[1] "Common Sense and its Cultivation," by Ernest Hanbury Hankin. Published by Dutton & Co., New York, 1926.

Whether the inventor works with the department head or with an assistant, neither can have an impartial and correct appraisal of the commercial value of the invention. Both are unlikely to realize many of the pitfalls to be avoided. They have rarely if ever come face to face with the potential importance which a choice of near-synonyms, or the location of a comma, may assume in Court. Probably neither of them ever planned or carried out the procedures of attack or the devices of defense in litigation. Hence they are not equipped to plan the specification to provide for both. They are unfamiliar with the requirements of rigid proof, and ignorant of the processes of the judicial mind, as disclosed by questions during arguments and by opinions rendered. So the inventor and his guide naturally take up the task of drafting and prosecuting the application with all the confidence and the safety of "babes in the wood."

They are trying to draft an agreement which shall remain workable and binding for seventeen years (nearly a generation) and which must correctly describe the boundaries of an intangible intellectual property in an idea. In prosecuting the application, they are negotiating a legal contract intended to bind the hundred million people in the United States to pay (perhaps millions) to the inventor (or his employer). They probably do not suspect that those two requirements make patent law the most intricate and difficult branch of the legal profession. Yet many judges and lawyers specializing in other fields recognize this fact without hesitation, realizing that, as an agreement in equity they cannot appraise the probable value even of a granted patent without a thorough study of its peculiarly complicated antecedents, relations and effects.

This usual "economy," when applied to valuable inventions, becomes waste. It entails needless heavy expense and great risk, when the patent comes to litigation. The total expense of sustaining a patent not infrequently reaches $50,000 to $200,000. Sometimes it mounts upward of a million dollars on behalf of the two parties, when everything is included. There are legal fees, expert fees, Court costs, reimbursal of fact witnesses, loss of employees' time, stenographic fees for hundreds of pages of records, the expense of putting the records in narrative form for appeals, printing bills, and more legal fees. Then there is the cost of encouraged competition. Finally there is often the complete or practical loss of rights and of exclusive markets which are worth hundreds of thousands, not infrequently millions.

Much of this expense and risk for a valuable patent is incurred for the convenient proximity of a few men and to save a few thousands of dollars involved in giving such patents the consideration which their importance merits. That is all that can be saved each year in the prosecution of those few applications which seem to promise large technical and industrial importance. These number only two or three a year, even for a large corporation. The cost of one minor loss in Court would pay the expense of careful competent prosecution of the few most promising patents which are likely to be developed in four or five years. Avoiding one heavy loss would repay the extra expense for perhaps ten or fifteen years.

There have been at least three examples of the cost of such economy in the last few years. In each, the out-of-pocket costs of plaintiff ran up into six figures and the gross value of the already developed annual business ran well into seven figures. Not one suit was lost because the development lacked novelty, usefulness or clear evidence of unfilled need. Not one was lost for lack of the very best obtainable legal ability for the trial. Neither did the final decision turn on any evidence of experts on either side. All three patents failed, in spite of everything that could honestly be done for them at the trials, because of faults in the specifications or claims of the patents themselves. All three were drawn, or prosecuted in the Patent Office, or both, by the corporations' own patent departments. Each arose in a different corporation and each in a different industry.

One had only a single badly chosen example, badly expressed, and no one experienced in both technology and litigation had ever studied the application or the issued patent until suit was decided upon. Another failed because the underlying principle that really constituted and characterized the invention had never been clearly determined by the inventor or demanded by the patent department so it could be clearly covered. The third produced a highly valuable product but the only specific example given did not because it contained blunders. The inventor was busily occupied on something else so the filing of the application and practical use of the invention were both delayed until other and clearer rights intervened.

Is there any reasonably sure preventive?*

* The answer is, "Frequently yes." The author's basis for that conclusion will appear in our January, 1938, issue.

Industry's Bookshelf

Water-White Hydrocarbons from Trinidad Asphalt by Halley Tansley Gaetz, Grafton Publishing Co., 126 W. 3rd st., Los Angeles, 284 pp., $5.00.

Describes a simplification of the process of preparation of hydrocarbons, summarizes experimentary work resulting in the isolation of 6 or 7 different hydrocarbon series in Trinidad asphalt.

The Law of Trade & Merchandise Marks in India by S. Venkatesaran, the Madras Law Journal Office, Madras, India, 767 pp.

Of real interest to anyone interested in Indian business. A complete summary of the law and trade customs and use of trade marks and brands in the Indian Empire, which has no uniform trade mark legislation.

How Can the Industry

Get and Hold

Competent Technicians?

Second Instalment

Six Point Plan for Industry

By C. F. Prutton
Professor, Chemical Engineering
Case School of Applied Science

The following are suggestions as to aid that may be rendered by industry to chemical and chemical engineering schools.

1. Industry should plan definitely for the development of the graduates it employs. Employment should be made with some general objective in mind and not just to get some immediate routine work done.
2. Salaries must be kept in line with those received in other engineering lines, and with the other chemical industries.
3. Industry should subsidize graduate work for desirable candidates, to a much greater degree than is done at present.
4. It should provide summer employment for undergraduates to train them, aid them financially and also so that the company can look over the men before offering them permanent employment.
5. It should subsidize faculty members by retaining them as consultants. This would enable teachers to receive a reasonable income; thus keeping better men as instructors. The experience of such contacts would greatly improve the faculty members.
6. It should aid the work of E. C. P. D. in training of men after graduation.

How the Industries Help

By R. D. Billinger
Assistant Professor, Chemistry
Lehigh University

Industries have helped us and continue to help us in the following ways:

1. By bringing us news of improved processes through speakers, movies, pamphlets, and charts.
2. Keeping us up to date by articles written in technical journals.
3. Supplying us with samples of new industrial products for museum display and tests.
4. Allowing us to assist in solving plant problems. This leads to industrial fellowships and practical research.
5. Taking our graduates and placing them in positions where they may continue to learn and improve themselves.
6. Reporting to us on the progress of our former students; and frank discussions of the industry's needs. While the period of depression somewhat curtailed these relationships, Lehigh has always been fortunate in having cordial relations with the chemical industries. We believe industrialists desire us to stress fundamentals and impart to our students the love of work. We expect that our graduates will be loyal and honest to their employers. In return they merit attention and cooperation. The combination should lead to advancement for all concerned.

Closer Cooperation

By W. E. Bradt
Head, Department Chemistry and Chemical Engineering
University of Maine

The first thing that occurs to me is the great lack of understanding between industry and the universities. This is, in part, removed by visits to the universities by men who are doing personnel work for industry. These men, however, are usually quite busy in performance of their duties and have little time to discuss general matters with university faculty members.

Another way in which this is removed is by staff members visiting various industrial concerns. I feel, however, that this rather places the responsibility on the shoulders of the faculty members and of necessity goes by default due to lack of the necessary funds. It is my suggestion that the industrial people might well assist in this matter of closer contact between universities and industry. Such assistance might actually consist of scholarships to worthy upper-classmen in the various departments of chemistry which would permit these students to travel through their plants. I notice that when students do visit industrial plants, very frequently employment results. Any large concern which would invite the upper ten or twenty per cent. of the senior class of any chemistry or chemical engineering department to visit them, would certainly gain by having a better opportunity for selection of future employees. A little financial assistance would make certain of an acceptance of such an invitation.

Another point which has occurred to me has to do

with the matter of better presenting to our students the actual problems which will be encountered by the average college graduate as he enters industry. Particularly in the isolated institution this is a very serious difficulty. Some students are inclined to the idea that they will immediately attack some major industrial problem, and consequently they feel very inadequate to such a problem. Others apparently have very little appreciation of the type of work for which they are preparing. This, you will note, is rather closely related to the first item mentioned. It might well, however, be remedied in a slightly different manner. If industrial men who visit universities were to talk to students, particularly about the situation to be encountered beginning their industrial experience, this would be much more valuable than to have them present some industrial problems in the abstract. Industry would do well to present more accurately the personal relationship between the man and the task, rather than merely the accomplishment of the task.

Endowed Professorships

By Albert Salathe
Head, Department Chemical Engineering
Syracuse University

I have been in charge of the chemical engineering work at Syracuse University for the past ten years. My problems have not arisen from the quality or character of students because our students in the department here have done excellent work year after year, nor have there been deficiencies in their preliminary training. There have been, however, some difficulties with the curriculum. I have always felt that 20 credit hours each semester, on the average, is more work than should be required from college students. We have had considerable difficulties due to finances, because chemical equipment costs money and because our department is still growing very rapidly. There is also a real difficulty because the industries have taken away from teaching, and into industrial work, all of our most promising young men.

In my viewpoint, it is high time that the industries took practical cognizance of these difficulties. I feel very strongly that they should endow professors' chairs and provide the expensive equipment necessary for proper training in the chemical subjects.

Teachers as Consultants

By George G. Brown
Professor, Chemical Engineering
University of Michigan

Chemistry, and particularly in chemical engineering, should train the student in exact quantitative thinking and the principles and application of chemistry, physics and mathematics to the type of problems they must solve for industry. From the teacher's standpoint, industrial contacts in the capacity of consulting engineer or technical expert serves to inform the teacher as to the type of work and the problems encountered in actual industry and is, therefore, considered essential for efficient training of the students for their place in industry.

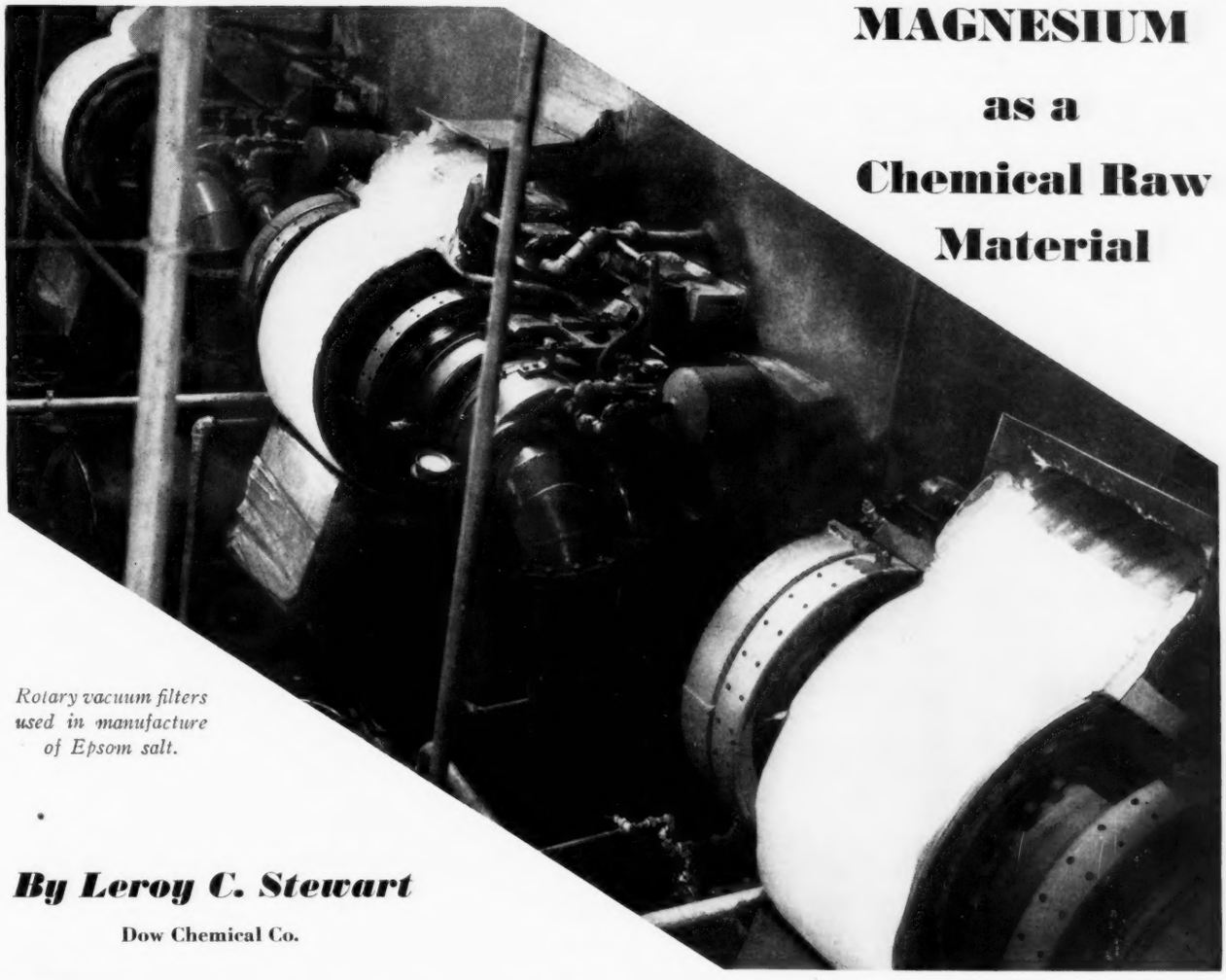
We are teaching men and not simply chemistry or engineering; that is, the teacher throughout the entire curriculum in all courses, particularly the professional courses which are encountered during the latter part of the college course, should insist that standards of expression, writing, personal appearance and personal relationships should not only be maintained but raised, because these factors are in most cases the ones which determine the value of the man to industry, society and himself. No matter how brilliant or competent an individual may be technically, if he cannot get along with his fellow men, express himself in a reasonably intelligent manner and make a fair personal impression, he is of little value to industry as it is now organized, and his success will always be greatly retarded.

The modern type of "Progressive Education," or whatever they call the modern method of wasting time in the lower grades, is a handicap, but not so serious as it may become if this lack of method is incorporated in the high school. Many of our students have not yet acquired the necessary self-discipline or ability to study when they enter the University. This means either that the Freshman and some of the Sophomore courses must be made extremely easy until these students adjust themselves, or else these students who have not been adequately trained cannot carry on without serious difficulty.

Although there is without doubt serious competition between industry and the educational institutions for the competent younger men, it is possible to hold these younger men who have a real desire to teach if they can supplement their inadequate University remuneration by means of consulting work of a professional caliber. This is highly desirable, not so much for the financial return which enables us to keep some of the younger men of promise, but for the reason outlined above which makes their teaching far more inspiring and practical. The only danger in this practice is that the teacher may become primarily a consulting engineer and neglect or lose interest in his University work. This can be avoided if the consulting work undertaken is of such nature that it is closely related to the theoretical work or research work carried on at the University, and particularly so if a large part of the work can be done in the office or laboratories at the University. In many cases, student assistants may be employed which also helps to tie in the consulting practice with the University work.

I feel that there are two ways in which industry may be of definite help; by cooperation with the work of the University in encouraging inspection trips through plants, outside lectures to the students, lending equipment when pertinent, and helping the teacher in his effort to obtain adequate remuneration for his educational activities, and in addition to all these, by the sympathetic and judicial encouragement of the teacher to undertake professional consulting work for the reasons which have been enumerated.

MAGNESIUM as a Chemical Raw Material



Rotary vacuum filters used in manufacture of Epsom salt.

By Leroy C. Stewart

Dow Chemical Co.

THE element magnesium is used extensively in a form in which its own characteristic properties are of major importance and are extremely conspicuous in the finished commercial product. Of prime importance, of course, is the low specific gravity of magnesium—1.74. When alloyed with a few per cent. of other common metals for industrial use, such compositions range in specific gravity from 1.76 to 1.86. Thus these light-weight alloys (known to the trade as Dowmetals) are approximately one-third lighter than aluminum, one-quarter the weight of cast iron, and one-fifth the weight of copper or nickel.

When magnesium alloys are substituted for ordinary metals in moving parts of machinery, there is a material saving in power costs and a reduction in vibration, and the automotive and aviation industries have been quick to make use of these advantages. Where human effort is involved, magnesium reduces the energy required in many operations, and we find it going into frames of vacuum sweepers, typewriters, portable tools, and many other fabricated articles where decreased weight is desirable. From the standpoint of industrial application another valuable asset of Dowmetals is their excellent machineability. Not only can a fine smooth finish be obtained with a minimum of working, but both speed and depth of cut can be increased over other structural materials, thus reducing manufacturing costs.

Hundreds of different combinations of magnesium with other metals have been prepared. Usually, however, a few general types of alloys will answer most industrial requirements. These are indicated in Table I.

Table I. Typical Magnesium Alloys

	Per cent. Metals Combined with Mg			
	Al	Mn	Zn	Si
Casting Alloys	6–10	0.1–0.3	0–3	0
Heat treatment may be desirable to give maximum properties.				
Wrought Alloys:				
Sheet	4	0.2	0	0
Increased resistance to corrosion by salt water	0	1.5	0	0
Forgings and Extruded Shapes	6–8	0.1–0.3	0.2–1.0	0
Die Castings	6–10	0.1–0.3	0	0.2–0.5

The use of unalloyed magnesium metal is limited. Pyrotechnics, chiefly for military purposes, were responsible for the early demand for magnesium in this country. Later it found use as a scavenger and deoxidizer in metallurgical processes, such as deoxidizer in nickel and nickel alloys. Another use of the chemical activity of metallic magnesium has been in promoting the Grignard reaction in the synthesis of organic chemical compounds.

Although magnesium was prepared by chemical methods early in the nineteenth century, the basis of commercial production may be considered as having been developed in 1852 when Bunsen first prepared the metal by electrolysis of fused magnesium chloride in a por-

celain crucible. He used a carbon cathode in which inverted pockets were cut. These collected molten magnesium, thus preventing the metal from rising to the surface of the bath where it would burn in contact with air. Further work led to construction of an electrolytic plant in 1886 at Hemelingen, near Bremen, Germany. This was succeeded about ten years later by an experimental plant of Griesheim Elektron, near Frankfort-on-Main, originally financed and later absorbed by the I. G. Farbenindustrie. The metal produced here and more recently at Bitterfield has been alloyed mostly with small amounts of aluminum or zinc or both, and sold under the name of Elektron.

The earlier German processes utilized magnesium chloride obtained from carnallite ($KCl{\cdot}MgCl_2{\cdot}6H_2O$). It has been reported that in 1932 the I. G. commenced using magnesite, imported from Austria, to avoid the more expensive process of separating the potassium chloride from the carnallite, and to eliminate the loss of chlorine in recovering the magnesium from the magnesium chloride. In operating this process, dead-burned magnesite is heated with charcoal or coke in a furnace, and chlorine is passed through the mass. The magnesium chloride obtained in this manner is electrolyzed to produce metallic magnesium and chlorine gas, the latter being fed back into the magnesite in the first step.

More recently, an experimental plant owned by the Austro-American Magnesite Company has been reported in operation in Austria at Radentheim, Corinthia, employing direct thermal reduction of magnesium oxide to the metal. Operations are said to have been begun about five years ago. Dead-burned magnesite mixed with coal dust is passed through an electric furnace containing three electrodes. The magnesium oxide is reduced to magnesium powder, which, together with the excess coal dust, is passed through a flue into which hydrogen is introduced. The mixture is then cooled and briquetted and passed into a small electric furnace from which the magnesium is distilled and is condensed in the form of small pellets. These are collected first under oil and then are melted and cast into ingots.

In the United States there was no commercial production of magnesium prior to 1915. The war in Europe practically eliminated imports, so that temporarily there existed a decided shortage of the metal. Between 1915 and 1917 a number of companies that had been experimenting with the preparation of magnesium actually began commercial production on a limited scale. Among these was the General Electric Company, which after a few years discontinued manufacture of the metal when it became evident that other domestic production was assured. The American Magnesium Corporation began production during those years at Niagara Falls, using a process involving the electrolysis of magnesium oxide (made by calcining magnesite) dissolved in a molten bath of mixed fluorides. About the same time, The Dow Chemical Company likewise had begun commercial production of magnesium metal, but from fused magnesium chloride recovered from natural brines in the vicinity of Midland, Michigan. In 1927 the magnesium oxide-fluoride bath process was discontinued, and since that time the entire domestic production of magnesium has been from magnesium chloride at the plant of The Dow Chemical Company.

In 1913 imported magnesium was selling in this country for $1.65 per pound. The shortage of the metal, which occurred as a result of the war, caused the price to go as high as $6.00 a pound. This latter price prevailed during 1915 but dropped during the next year

Table II. Domestic Magnesium Metal Sold or Used in United States 1917 to 1936[1]

A. Includes Ingots and Fabricated Forms

Year	Pounds	Value	Av. Price per lb. for Ingot
1917	115,813	$233,626	$2.02
1918	284,118	615,217	1.81
1919	127,465	247,302	1.83
1920	.....[2]	.....[2]	1.60
1921	48,000	86,000	1.30
1922	60,000[3]	89,000[3]	1.60
1923	125,000[3]	155,000[3]	1.25
1924	128,000[3]	150,000[3]	1.07
1925	245,000	274,400	.86
1926	322,650	390,400	.80
1927	366,400	441,700	.68
B. New Ingots Only			
1928	530,782	289,658	.55
1929	908,351	512,313	.56
1930	559,631	268,864	.48[4]
1931	580,463	199,633	.34
1932	791,699	228,653	.29
1933	1,434,893	377,181	.28
1934	4,249,838	.....[2]	.30[4]
1935	4,241,218	.....[2]	.30[4]
1936	3,903,312	.....[2]	.30[4]

[1] Compiled from "Mineral Resources," U. S. Dept. of Commerce, 1918-1931, and Minerals Year Book, U. S. Department of Interior, 1932-37.
[2] Data not available.
[3] Estimated.
[4] Approximate market price for carload quantities.

and at the beginning of 1917, domestic magnesium of 97 per cent. purity was selling in bars at $2.50 to $3.00 a pound. Since that time, there has been a continual decrease in price until in 1936 the 99.8 per cent. purity material sold in ingots at 30 cents per pound in carload quantities. During the same twenty years, the quantity sold in this country increased from approximately 116,000 pounds to about 4,000,000 pounds. The trend of both quantity production and carload price is given in Table II.

Of the foreign countries, Germany is the leading producer of magnesium. Accurate figures are not available as to the total production in that country, but it has been estimated that in 1932 the German output of magnesium was around 2,000 tons, and that this was increased approximately to 25,000 tons by 1934, and to 35,000 tons in 1935. The large German producer is, of course, the I. G. Farbenindustrie. Wintershall A. G. is said to be the only other manufacturer, and has a relatively small capacity, probably 5 to 10 tons per day.

Japan is another important foreign producer of magnesium. At present, there is only one commercial manufacturer there, Nichiman Magnesium Kabushiki

Table III. Production and Consumption of Magnesium in Japan, in Pounds*

Year	Production	Consumption		
		Imports[1]	Domestic Output	Total
1930	.....	19,790	.....	19,790
1931	7,080	18,320	6,200	24,520
1932	52,850	42,500	52,400	94,900
1933	230,850	56,150	174,500	230,650
1934	310,000	1,358	264,000	265,358
1935	770,000[2]	Probably none	550,000[2]	550,000[2]
1936	1,430,000[2]	Probably none	770,000[2]	770,000[2]

* U. S. Bureau of Mines, "Mineral Trade Notes," June 19, 1937.
[1] Principally from Germany.
[2] Official data not available; estimated.

Kaisha, this company having been formed in 1933 by merging several smaller producers. Both sea-water bittern and calcined magnesite are used as sources of magnesium chloride, from which the metal is obtained by the electrolytic process. It is understood that two or three other companies are contemplating manufacture of magnesium in Japan, one using the Austrian process of direct thermal reduction of magnesite. Table III gives reported production and consumption of magnesium in Japan since 1930.

In England, Magnesium Elektron Limited began production of magnesium in February, 1937, at Clifton Junction, using calcined dolomite and chlorine to form the magnesium chloride from which the metal is made by electrolysis. Some metal is also said to be produced at Rainham. Total production for the country is reported at 1,500 tons per year at present, with an increase to double that amount expected in the near future. In recent years some magnesium has been imported into England from both Germany and the United States.

Three principal magnesium producers in France have a total capacity in the neighborhood of 1,500 tons per year. This is estimated as close to the annual consumption in that country at the present time. Switzerland is now producing in the neighborhood of 700 tons of magnesium per year. Italy has produced little or none on a commercial scale to date, but it has been reported that a pilot plant has been in successful operation and is being followed by a commercial plant. Some magnesium was produced in Norway several years ago, but, according to recent reports, none is being manufactured there at present. Production is being studied in Russia and recently has been inaugurated to a limited extent in Australia.

Magnesium Oxide and Carbonate

A rapidly growing tonnage of magnesium compounds has been consumed by industry for many years. Much magnesium oxide is obtained by calcining magnesite. This latter mineral is a carbonate of magnesium which, when heated to temperatures above 600° C., decomposes into carbon dioxide gas and magnesium oxide. The chief deposits of magnesite are in California and Washington in this country and in Russia, Austria, Manchuria, and Greece, abroad. Table IV shows world production of magnesite during recent years.

The temperature and time of burning the magnesite govern its chemical activity. Hence, for lining blast furnaces or other refractory purposes, where an inert material is desired, the calcining conditions are quite severe, and the product is called dead-burned magnesium oxide. Where chemical activity of the resulting material is desired, the heating conditions are less rigorous, and the product is known as plastic-calcined magnesia. A much greater tonnage of dead-burned magnesite than plastic-calcined material is used each year. This has been particularly true in recent years, when increased production in the steel industry has resulted in a much greater demand for refractories.

The present consumption of plastic magnesia is chiefly in the rubber industry as filler and accelerator. In the period of 1920-1925, by far the biggest share of this form of calcined magnesite was used in magnesium oxychloride cement compositions for stucco and flooring. This field decreased from 1925 until the last few years, when flooring and factory-made magnesia cement articles have again become more prominent. In this connection a recent improvement in the properties of these cements by D. S. Hubbell (U. S. Pat. 2,058,984, also *Ind. Eng. Chem.*, Vol. 29, 1937, p. 123) will likely extend the field of use of these compositions. The new cement is very strong and has exceptionally good resistance to leaching by water; also it has desirable antiseptic and germicidal effect on many organisms including Trichophyton,which is the cause of so-called "athlete's foot." Table V gives interesting production, sales and value statistics for recent years, concerning both crude and calcined magnesite.

Dolomite is a natural mixed carbonate of magnesium and calcium used extensively as a raw material for the

Table IV. The Industry in Foreign Countries

World Production of Magnesite, by Countries, in Metric Tons[1] from Minerals Yearbook, 1937, U. S. Dept. Interior

Country	1931	1932	1933	1934	1935
Anglo-Egyptian Sudan	.....	.....	.....	.....	256
Australia:					
New South Wales	3,480	5,199	9,512	15,902	15,940
Queensland	.....	132	152	42	.....
South Australia	.....	117	205	208	51
Victoria	51	29	6	26	234
Austria	179,440	134,409	164,331	258,382	300,312
Canada[2]	24,345	2,833	27,158	27,385	27,129
China (Manchuria)	36,034	55,386	71,376	72,000	.....[3]
Chosen	[3]	[3]	[3]	3,168	2,410
Czechoslovakia[4]	38,918	33,965	49,935	58,235	70,838
Germany	[3]	[3]	[3]	11,010	13,818
Greece	49,990	44,699	44,719	70,388	.....[3]
India, British	5,419	14,087	15,450	15,215	17,257
Italy	3,470	460	2,187	1,100	950
Norway	1,580	1,311	2,007	2,500	2,526
Southern Rhodesia	.....	14	.....	.....	.....
Turkey	2,197	310	951	628	1,092
Union of South Africa	1,357	1,418	1,495	1,667	1,485
U.S.S.R. (Russia)	246,000[5]	334,454	380,300	482,000	.....[3]
United States	66,770	34,892	98,145	91,601	160,711
Yugoslavia[6]	32,209	33,317	14,602	25,086	30,225

[1] Unless otherwise stated quantities in this table represent crude magnesite mined.
[2] Magnesitic dolomite.
[3] Data not available.
[4] Exports, less imports, of crude and sintered magnesite, the sintered being reduced to crude on the basis of 2.1 tons crude to 1 ton sintered.
[5] Year ended Sept. 30.
[6] Serbia only.

basic carbonate used in the so-called "85 per cent. magnesia" pipe and boiler coverings. A considerable number of basic carbonates of magnesia have been reported in the literature, but the formulas $4MgO.3CO_2.4H_2O$ and $5MgO.4CO_2.5H_2O$ are representative of the commercial product. The normal carbonate is not important commercially as a thermal insulating material because of its definite crystalline structure. The use of basic carbonate for this purpose is due to its physical properties, i.e., low apparent density and absorptive power.

The bulk of the basic magnesium carbonate manufactured in this country is made by the original Pattison process or a modification of it. In general, the process consists in calcining the rock (usually dolomite, although magnesite may be used), slaking the resulting oxide with water, recarbonating under pressure to form the soluble magnesium bicarbonate which is decanted from the calcium carbonate, and boiling this solution to precipitate the basic carbonate. Estimated U. S. production of basic magnesium carbonate is 75,000 tons per year at the present time. The greater share of this amount is used as "85 per cent. magnesia" and the manufacturers of such insulating composition practically control the source of their magnesia. Imports of the magnesium carbonate for the last ten years have averaged about 300 tons per year, while exports have averaged approximately 2,500 tons per year. Market price quotations have been reasonably constant for a number of years. Present quotations on the basic carbonate are 6 to 7 cents per pound for the technical grade in carload lots of bags, and 9 to 10 cents per pound for the U.S.P. grade in barrels. Commercial grades are sold usually on basis of apparent density and absorptive properties, the various consuming industries having different requirements in this respect.

Table V. Statistics of the Magnesite Industry in the United States

From Minerals Yearbook, 1937, U. S. Dept. Interior

	1925-29 (average)	1933	1934	1935	1936
Crude:					
Mined:					
Short tons	138,102	108,187	100,973	177,154	207,119
Value[1]	$1,264,526	$840,000	$730,630	$1,192,052	$1,411,664
Sold by producers:					
Short tons	1,210	1,576	1,588	1,626	1,669
Value	$13,310	$20,769	$18,393	$22,345	$24,420
Average per ton[2]	$11.00	$13.18	$11.58	$13.74	$14.63
Imports for consumption:					
Short tons	603	11	50	49	59
Value	$6,191	$200	$706	$1,084	$1,130
Apparent new supply:					
Short tons	1,813	1,587	1,638	1,675	1,728
Per cent. domestic	66.7	99.3	96.9	97.1	96.6
Caustic calcined:					
Sold by producers:					
Short tons	16,214	4,835[3]	4,110[3]	6,049[3]	7,998
Value	$538,344	$143,250[3]	$120,525[3]	$170,326[3]	$221,310
Average per ton[2]	$33.20	$29.63[3]	$29.32[3]	$28.16[3]	$27.68
Imports for consumption:					
Short tons	10,675	1,850	1,553	1,441	2,196
Value	$249,182	$33,081	$36,031	$36,076	$49,674
Apparent new supply:					
Short tons	26,889	6,685[3]	5,663[3]	7,490[3]	10,194
Per cent. domestic	60.3	72.3	72.6[3]	80.8[3]	78.5
Dead-burned:					
Sold by producers:					
Short tons	47,158	46,919[3]	41,953[3]	72,438[3]	89,979
Value	$1,124,618	$880,740[3]	$772,233[3]	$1,361,949[3]	$1,713,527
Average per ton[2]	$23.85	$18.77	$18.41[3]	$18.80[3]	$19.04
Imports for consumption:					
Short tons	56,787	23,509	22,921	24,674	42,608
Value	$828,663	$341 780	$368,014	$429,830	$662,567
Apparent new supply:					
Short tons	103,945	70,428[3]	64,874[3]	97,112[3]	132,587
Per cent. domestic	45.4	66.6	64.7[3]	74.6[3]	67.9

[1] Partly estimated; most of the crude is processed by the mining companies, and very little enters open market.
[2] Average receipts f.o.b. mine shipping point.
[3] Revised figures.

Dolomite has other important uses. In fact, from the standpoint of tonnage, the largest use of dolomite is in the steel industry, where it is employed in the dead-burned form. In 1936 it is estimated that approximately 600,000 tons of domestic dead-burned dolomite were used for refractory purposes. In addition, an appreciable tonnage of raw dolomite was used for patching open hearth furnace bottoms. The paper industry takes in the neighborhood of 30,000 tons of dolomitic lime per year in the manufacture of sulfite pulp. Dolomite is used also to some extent as a source of carbon dioxide, because of the value of magnesium compounds, such as the hydrate or sulfate, which can be obtained as a by-product.

Ocean water is a recent raw material used by the Marine Chemicals Company, Ltd., of South San Francisco, Calif., in the production of magnesium carbonate, hydroxide, and oxide (*Ind. Eng. Chem.*, Vol. 28, p. 383, 1936). The magnesium compound found in sea water is the chloride. It is present to the extent of almost one-half of one per cent. When the sea water is brought in contact with a slurry of calcium hydrate, a precipitation of magnesium hydrate is formed. This is very insoluble and can be settled or filtered from suspension. The hydrate can be carbonated or calcined to the oxide if desired. An interesting new product developed from this process is called Hydro-Magma powder, and is magnesium hydroxide monohydrate, $Mg(OH)_2.H_2O$. It is said that this new material has the property of forming stable suspensions when mixed with water, thus making it possible to obtain milk of magnesia merely by stirring the dry powder into suspension.

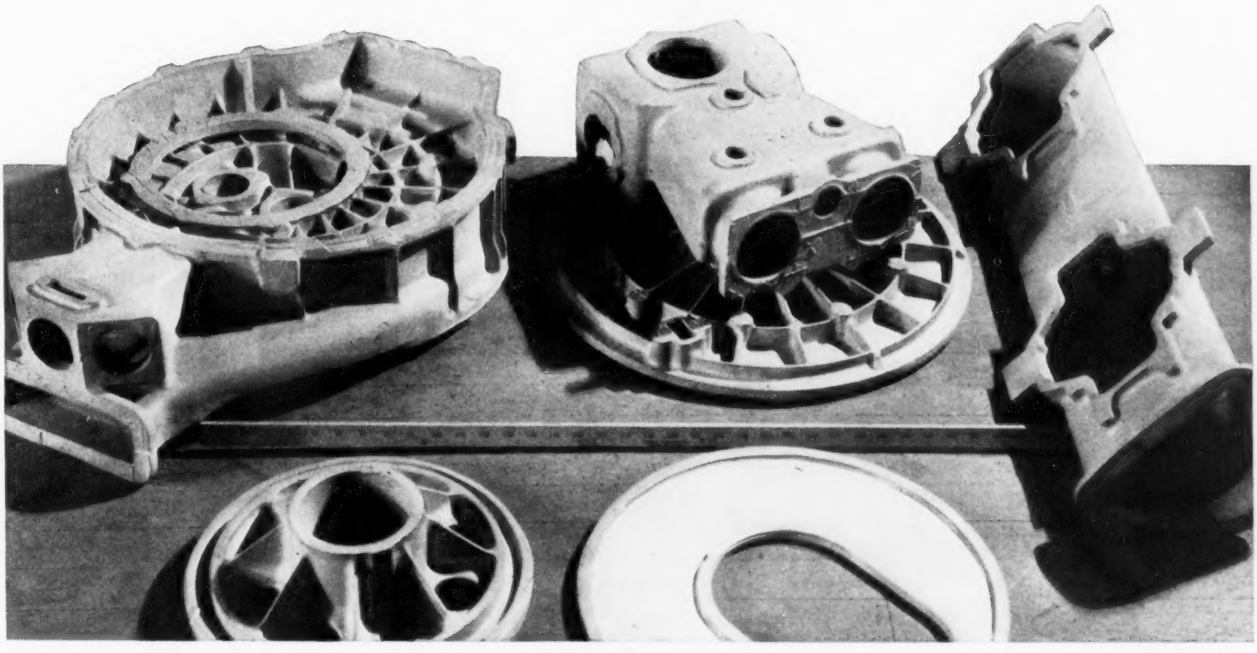
The bittern remaining when common salt is obtained from sea water by solar evaporation will be used as a source of magnesium oxide in a plant at Newark, California, which is being put into operation at the present time by Westvaco Chlorine Products Corporation. The first product of their plant will be dead-burned magnesium oxide. The best grade of this material, as obtained from magnesite, contains desirable small amounts of impurities such as iron and silica. Since the magnesium hydrate precipitated from the sea water bittern is very pure, these foreign materials will be added in controlled amounts so that the calcined product will be of more uniform composition than can be obtained ordinarily from quarried mineral raw materials.

The most extensively used magnesium salt is the sulfate, more commonly known as Epsom salt. The latter name was acquired from the fact that it is said to have been prepared first at Epsom, England, in 1695, by a man named Grew, who evaporated local natural saline solutions. Present-day production of magnesium sulfate in this country involves using magnesium hydroxide, made from calcined magnesite or precipitated from natural brines containing magnesium chloride, by reacting the latter with lime. A water suspension of the hydroxide is reacted with sulfuric acid or sulfurous acid. In the latter case, the acid is made by burning sulfur in air and passing the resulting sulfur dioxide gas into the suspension. The magnesium sulfite solution thus formed is then oxidized to the sulfate by blowing a current of air through it. After the sulfate solution has been obtained, it is concentrated by evaporation and the Epsom salt obtained and purified by crystallization.

It is estimated that in 1936 about 65,000,000 pounds of magnesium sulfate, $MgSO_4.7H_2O$, were consumed in this country, with approximately 5,000,000 pounds of this being imported from Germany. The rayon and leather industries were the largest users, with the pharmaceutical and cattle food manufacturers also requiring considerable quantities. Magnesium sulfate is also employed as a mordant in dyeing and printing textiles, as an ingredient in paper sizing materials and in plastic magnesia cements, particularly in binding wood fibers together to make slabs of wall board having sound absorbing properties. The motion picture industry sometimes employs Epsom salt crystals as artificial snow in winter scenes. Particularly in the New England states and in some southern localities, magnesium sulfate has been added successfully to the soil to make up for the existing deficiency in magnesium ions. In recent years kieserite, the natural sulfate, $MgSO_4.H_2SO_4$, found native in large deposits in Germany, has been imported into this country in considerable quantity, particularly for use in the rayon industry. This, of course, has replaced an equivalent amount of the domestically produced magnesium sulfate.

Most of the magnesium chloride produced in this country is found in natural brines in the vicinity of Midland, Michigan. The remainder is obtained in California from the bittern left after solar evaporation of sea water for recovery of common salt. The production from these sources involves chiefly the evaporation of water from the solution in which it occurs, followed by selective crystallization in order to eliminate impurities, most common of which are sodium chloride and calcium chloride. In Germany magnesium chloride is recovered as a by-product of the potash industry from the Stassfurt deposits of carnallite, $KCl.MgCl_2.6H_2O$. Importations from this source to the United States began during the last half of 1918 and increased rapidly from 7 tons in that year up to a maximum of 11,500 tons in 1923. Since that time the imports have dropped steadily until in 1936 they were down to approximately 16 tons. This rapid rise and fall was due to the corresponding popularity of magnesium oxychloride cement stucco and flooring compositions in the building industry. Domestic production of magnesium chloride increased in a corresponding manner, but the decrease which followed has not been so drastic. Producers in California and Michigan now supply practically the entire home market, which is appreciably less than it was in 1923. In addition, the rapidly increasing manufacture of magnesium metal in Michigan has provided an extensive use for the chloride from that source.

Early shipments of magnesium chloride were in the solid form in large metal drums. Molten magnesium chloride, $MgCl_2.6H_2O$, was poured into the drums and



Lightweight Dowmetal castings

allowed to cool and solidify. To use it, the drums were destroyed and the large chunks split up into smaller pieces which were dissolved in water. Soon afterward the imported material was sold as hexahydrate crystals. About 1920 The Dow Chemical Company began furnishing magnesium chloride flakes in both 350-pound drums and 100-pound sacks. Before flaking the molten magnesium chloride, the latter is heated to a high enough temperature so that some of the water of crystallization is removed. Thus, the commercial flakes have an analysis equivalent to 101-102 per cent. $MgCl_2.6H_2O$. The rapidity of solution of this form of material, combined with its convenience of handling, created a demand by the trade which has led to almost exclusive manufacture of the flaked product by both foreign and domestic producers. Small quantities of magnesium chloride powder, made by grinding the flaked material, also are being made and sold. In the production of magnesium metal from the chloride, the latter is boiled to a sufficiently high temperature to give a composition of $MgCl_2.4H_2O$, which is then formed into flakes. These are dried still further under special conditions to approach the anhydrous condition, in which form they are fused and subjected to an electric current to form the molten magnesium metal at one electrode and chlorine gas at the other.

At the present time, the biggest use for magnesium chloride is in the production of magnesium metal. Next in order of industrial requirements is preparation of magnesium oxychloride cements, to which reference has been made in the discussion of magnesium oxide. Other minor uses are in the preparation of sweeping compounds, in preparation of fire-resistant wood, and as a cooling agent for drilling in saline deposits. Some quantities are used in preparation of milk of magnesia for pharmaceutical purposes.

Another magnesium salt used to some extent is the silicofluoride, sometimes called magnesium fluosilicate, $MgSiF_6$. It is a white crystalline powder made by reacting the hydroxide or carbonate of magnesium with hydrofluosilicic acid. It is used in the ceramic industry and frequently, in water solution, it is employed as a surface-hardener of Portland cement concrete floors.

In making any attempt to evaluate the future of magnesium and its compounds, it would seem that the oxide, carbonate and salts are geared pretty closely to the economic prosperity of the country. There is the possibility, however, that the recently-invented improved magnesium oxychloride cement composition may increase appreciably the use of plastic-calcined magnesium oxide and magnesium chloride. It is quite clear, however, that the next few years will find an ever increasing consumption of magnesium metal itself. Just as the medical profession is prescribing more frequently to avoid overweight in the human body, so too the designing engineer likewise is eliminating more and more overweight in all forms of industrial and home equipment. In both cases the resulting saving in energy makes for better operation and longer life.

Names of the Month—

A Current Supplement to the Chemical Who's Who

BENNETT, Sidney R., v-p., Nat'l Milk Sugar Div., Borden Co.; b- St. Charles, Ill., 6 Aug. 1887; mar. Isabella M. Collins, Bainbridge, N. Y., 21 Oct. 1915; educat. Amherst Coll., B.S. 1909. Nat'l Milk Sugar Co., prod. mgr. since 1909, v-p. 1928; merged with Borden Co., 1929. Clubs: Chemists'; Sidney Golf & Country. Hobbies: hunting, fishing, golf. Address: Bainbridge, N. Y.

BOEDDINGHAUS, Hugo, dir. research and development, American Felt Co.; b- Bklyn., 5 Aug. 1892; mar. Helen Mornhinweg, Mt. Vernon, N. Y., 4 Aug. 1916, 1 dau.; educat. Adelphi Acad. 1910; Berlin and Bonn 1914. Dealer and mfg. dyestuffs and intermediates to 1919; Milton Woolen Mills, owner to 1922; Amer. Felt Co. 1930-37. Clubs: Osiris Country; B. P. O. E., Elks 247. Hobbies: sports. Address: Amer. Felt Co., Newburgh, N. Y.

BORUFF, Clair S., tech. dir., Hiram Walker & Sons, Inc.; b- Joy, Ill., 21 Sept. 1901; mar. Alice Waterhouse, Monmouth, Ill., 25 Dec. 1927; educat. Monmouth Coll., B.S. 1923; Univ. Ill., M.S. 1925, Ph.D. 1931. Monmouth Coll., assoc. prof. chem. 1924-28; State Water Survey, Urbana, Ill., asst. chem. 1928-30, chf. chem. 1930-34; Hiram Walker & Sons, Inc., tech. dir. 1934 to date. Author many tech. papers in A. C. S. pubs. Memb. A. C. S., Water & Sanitation Sect., sec. Address: Hiram Walker & Sons, Inc., Peoria, Ill.

ECKHOUSE, George Hays, gen. purchasing agt., Wilson & Co., Inc.; b- Anderson, Ind., 1 July 1882; mar. Minnette Rosenthal, Lafayette, Ind., 21 Oct. 1907, 2 sons; educat. Purdue, B. S. M. E. 1903. Home Heating & Lighting Co., 1903-04; Schram Glass Mfg. Co., 1905-10; Wilson & Co., Inc., 1910-37. Memb. Purchasing Agts. Assn. (Chgo.); Am. Forestry Assn.; Chgo. Art Inst. Clubs: Ravisloe Country; Dorchester. Hobbies: golf, art, greenskeeping, horticulture. Address: 4100 S. Ashland Ave., Chicago, Ill.

HASSELSTROM, Torsten, dir. res., G. & A. Labs.; b- Helsingfors, Finland, 2 Mar. 1895; mar. Cecilia Sandberg, Helsingfors, 16 Dec. 1921; educat. Tech. Inst., Helsingfors, Ch.E. 1920, D.Sc. in Ch.E. 1925. Scandinavian Expd. to Northern Mongolia, asst. geologist 1917; Tech. Inst., instr. chem. 1921-28, prof. org. chem. 1929; Abo Acad., docent 1928; Columbia, Rockefeller res. fell. 1929-30, res. fell. org. chem. 1930-36; G. and A. Labs., dir. res. 1936 to date. Finnish war, 1918. Author about 40 scientific pubs. concerning mono and bicyclic terpenes, retene, and resin acids in Jl. A.C.S.; Annalen der Chemie; and Finnish Acad. of Science. Memb. A. C. S.; Sigma Xi; Phi Lambda Upsilon. Hobbies: general history, travel. Address: G. & A. Labs., Savannah, Ga.

STRICKLER, Dean Gundy, sales mgr., Ansbacher-Hagerstown Chem. Corp.; b- Mifflinburg, Pa., 16 June 1903; mar. Ruth M. Klinger, Westminster, Md., 13 June 1927, 3 sons; educat. Penn. State Coll., A.B. 1925. Union Chem. Co., treas. 1925-30; Keystone Labs., sales mgr. 1931-32; Ansbacher-Siegle Corp., sales representative 1933-36; Ansbacher-Hagerstown Chem. Corp., sales mgr. 1936 to date. Address: Box 151, Hagerstown, Md.

WATSON, Clement Harmon, resident mgr., Warner Chem. Div., Westvaco Chlorine Prods. Corp.; b- Minden, La., 29 June 1907; educat. Tulane Univ., B.S. (Ch.E.) 1928. Curtin-Howe Corp., chem. engr. in wood preservation, 1928-34; Warner Chem. Div., Westvaco Chlorine Prods. Corp., 1934 to date, prod. supt. 1934-36, plant engr. 1936-37, resident mgr. 1937 to date. Memb. Axe. Hobbies: golf, fishing. Address: Westvaco Chlorine Prods. Corp., Carteret, N. J.

The Control Laboratory a Managerial Necessity

By Lawrence W. Bass

Assistant Director, Mellon Institute of Industrial Research

RARELY in manufacturing operations are quality control laboratories used with greatest effectiveness. The analysts trudge through their routine functions and are not encouraged to make themselves seen or heard unless trouble arises in product or process. They serve largely in a defensive role and are seldom asked to contribute directly to the front line attack of management on its trade problems.

The use normally made of quality data is in principle not less illogical than would be the operation of a large department store without an up-to-date bookkeeping system. Through historical development the analytical and testing laboratories are usually under the production department. The daily reports seldom get further than the desk of one of the production chiefs. There, unless they shout an emphatic warning of trouble ahead, they are not likely to receive more than a passing glance before they go to file, spindle, or waste-basket. Nevertheless, this supine function of muzzled watch-dog is admitted to be worth its cost.

Taken from industry where he was director of research of the Borden Company, to be assistant director of the Mellon Institute, Dr. Bass has a rich experience upon which to base his interesting conclusions as to the importance of management of chemical control, and his definite proposals are practical and suggestive to a high degree.

Aggressive management can, however, by tried procedures, orient the laboratory to yield a much more worth-while contribution to the business; namely, an exhaustive knowledge of quality of product in proper perspective in its commercial environment. The process is not complex. It requires merely the thorough correlation of all quality control data, of all analyses and tests on justified complaints, and of all information about competing products. A further dividend from enlightened laboratory administration is the thorough insight into operations that can come only through "chemical bookkeeping."

No business of any size could today conceivably operate for long without a bookkeeping system. Management must know the facts about its finances, must tabulate the figures and dissect them.

In contrast, comparatively few companies have come to realize that quality of product—on which business success in large measure eventually depends—is susceptible to similar analysis. The way is simple. The laboratory needs but to make the proper type of periodic summary of its data, preferably every month. For maximum usefulness this tabulation should not come to rest in the production department, but should go on to the general executives of the organization.

The monthly laboratory audit should give a complete review of all tests on all major raw materials and products, including, also, where warranted, important intermediates. The tabulation should include columns for each type of analysis conducted, with entries under each raw material or product. A convenient form may be developed by placing raw materials and products along the left margin of the report sheet, with vertical columns for the tests on each. In best practice the major vertical columns are then subdivided to show number of determinations, average or mean values, and minimum and maximum values. To be sure, such a sheet is by no means of vest-pocket size, but neither is a detailed financial statement.

The problem should be placed squarely before the laboratory head—who, incidentally, should be appointed with a view to developing an executive rather than a foreman—to provide a report with minimum of detail which will still give a clear picture of the findings of his department. If no other good were accomplished, this summary would in many cases do much to improve the control program. In passing, it is pertinent to advise that the taking of samples for analysis should properly be under the direction of the laboratory and not of the production group.

One criticism of such a system is sure to arise, probably in a simultaneous howl from several sources in the organization: "Think of the time the laboratory will waste preparing such a report!" The answer is that, on the contrary, any reasonable amount of effort has been profitably expended if it puts control data to constructive use. The tabulation will take time, considerably more than is normally spent on laboratory reports; but no one criticizes accounting, production, or sales departments for detailed figures that constitute a real aid to the business. Of course, it is in considerable

degree the fault of the technical man that he has not found a way to tell his own story.

A tabulation of this sort inspires the aggressive laboratory chief to renovate the control program. Is the amount of work allocated fairly among the various products? Are not some tests being overworked, simply because inertia has prevented a rearrangement of the control schedule? Is there not a need to initiate new or improved tests? There may even be conclusive evidence to present to the boss that the control program should be enlarged.

Production departments, by effective use of the data, will be able to ensure greater uniformity, to effect economies in operation. Salesmen will be armed anew by more thorough confidence in their wares. Through study of these summaries of control tests, management will gain a more thorough insight into product quality.

The control laboratory should make a thorough examination of every lot of product on which a complaint has been received. The record of the case should include all available information on the history of the shipment before leaving the factory, in transit, in the customer's storage, and in use. Data from laboratory tests on the sample should, of course, be compared with figures previously obtained for the same factory lot or batch when it went through routine examination.

A summary of justified complaints should be kept in systematic fashion, giving all figures obtained through standard tests as well as any special information derived from supplementary examination. A tabular review of complaint data can often be advantageously combined with the monthly summary of all control work.

Study of the complaint file should instill a new spirit into the control program. Why was the defect not caught in routine examination? Are tests on finished product too infrequent? Is sampling procedure inadequate? Are present tests ineffective in disclosing definite points of weakness? What new methods of examination can be developed to give a more certain index of product quality?

Analyze Your Competition

A most illuminating view of a company's trade situation can be obtained through a thorough study of competitors' products in comparison with its own. The samples should be taken in such numbers and under such conditions that they may be fairly compared. A most ludicrous proceeding sometimes occurs through overenthusiasm, to put it mildly—the "stacking" of selected samples of the company's own products from factory storage or production line against competing products secured in the open market or through trade channels. This is especially vicious when the materials are readily susceptible to deterioration or spoilage. If this were not a fairly common practice, it would be superfluous to emphasize that the samples should all be picked up under conditions as nearly comparable as possible.

Such a survey of competition should be made a regular feature of the control program. It is well, also, to include products that may not be in direct competition but give promise of being a factor in the future. Each salesman should be encouraged to send samples in for transmittal to the laboratory, particularly of any new products he encounters in the field; this procedure has the further advantage of making him feel he is in close touch with the home office.

The laboratory work should include not only the routine tests used on regular production runs, but also any supplementary service or practical tests that help to shed light on the relative merits of the products under conditions of use. The report on surveys of competition can likewise be included to advantage in a monthly summary of all control data.

Sales, advertising, and production executives should all be kept in touch with these surveys of competition. The discussion of the results affords an ideal means of bringing all departments of the business into action, for all should be interested in quality, and all can understand its significance when it is expressed in quantitative terms.

Throughout the foregoing three types of control activity the analytical and testing laboratory should be coordinated with the research department, which historically is its offspring in most industries. Many investigations of greatest importance are suggested to research men through a thorough knowledge of product difficulties and through an understanding of the competitive situation.

Find Your Production Leaks

An ultimate benefit to be obtained from thoroughgoing use of laboratory control data lies in the introduction of "materials balance" accounting, or "chemical bookkeeping." This means simply the checking of incoming raw materials against finished product, with allocation of losses and wastes against the proper steps in process.

In some industries workable systems of materials balance have been in operation for years, but they are far from being the general rule. In many other cases what purports to be an accurate accounting is vitiated by the use of arbitrary and inaccurate conversion factors, and by the employment of "wash" items to bring the figures into a theoretical balance with an assumed percentage of waste. In the majority of instances materials are accounted for only on the basis of a periodic inventory.

Materials balance accounting is not to be undertaken lightly; the details of any general method require elaboration to suit the needs of the individual plant. And this requirement calls for close cooperation between three departments: control laboratory, production, and accounting. It must be evolved as a practical, accurate procedure for following material through process from receiving platform to shipping room.

The laboratory is called on for analytical data, the production department for accurate figures on weights of materials; the two are integrated in the accounting. Common sense is an essential qualification for all concerned.

The accounting in any given series of processes should be based on the flow of one, two, or at most a few constituents that can be determined through analysis with requisite accuracy. Frequently the regular program of laboratory control provides adequate data, although this may need to be revised or increased. If so, it is likely that more determinations of the necessary type can be made at the expense of less essential tests that may have been continued unnecessarily for years through habit. The task of the production department in providing quantitative information on weights of materials going through process is not easy, for there is great need for improved weighing and metering equipment.

The gains from materials balance accounting spread throughout the organization. The purchasing department receives factual guidance, for the cheapest raw material is not always the most economical. The production department feels an increased responsibility, with a real incentive to improved efficiency. The control laboratory becomes an integral part of the business. The salesmen feel a new unison in the organization behind them. And management at last has significant process figures to guide its decisions.

Industry's Bookshelf

The Seventeen Million by Ogden L. Mills, Macmillan Co., 60 Fifth ave., N. Y., 143 pp., $1.75.

The last and a notable contribution by the late Mr. Mills: an ardent plea for old fashioned liberalism.

The New World of Chemistry by Bernard Jaffe, Silver Burdette, N. Y., 596 pp., $1.80.

A pandemic textbook for high school imparting chemical principles through practical applications and vivid everyday examples.

Biological and Clinical Chemistry by Murray Steele, Lea & Febiger, Phila., 770 pp., $8.00.

An extremely comprehensive work with particular emphasis upon the clinical aspects of pathological conditions as revealed through biochemistry.

Die Chemie und Chemische Technologie des Wassers by Dr. J. Holluta (Ferdinand Enke, Stuttgart), unbound RM. 14,80, through Universum Book Export Co., 45 E. 17th st., N. Y. C., $4.

Chemical contents of water and its chemical technology with individual aspects regarding the physical chemistry.

Die Denkweise der Physik und ihr Einfluss auf die geistige Einstellung des heutigen Menschen by Prof. G. Mie, 2nd rev. ed. (Ferdinand Enke, Stuttgart), unbound, RM. 0,75, through Universum Book Export Co., 45 E. 17th st., N. Y. C., 15c.

The science of physics and its present day influence upon man.

The Good Society by Walter Lippmann, Little, Brown, Boston, 240 pp., $3.00.

Typical Lippmann—clear-cut analysis and forceful conclusions on the world wide social battle of individual against Government.

Elasticity, Plasticity and Structure of Matter by Dr. R. Houwink, Macmillan, N. Y., 376 pp., $6.00.

Successful attempt to put chemists and physicists on an even footing regarding the structure of materials.

More Security for Old Age by M. G. Schneider, Twentieth Century Fund, N. Y., 191 pp., $1.75.

Factual report on the present old age pension plans and laws in this country with a report making definite recommendations for the revision of the Social Security Act.

If War Comes by R. Ernest Dupuy and George F. Eliott, Macmillan, N. Y., 368 pp., $3.00.

An appraisal from the military point of view of the present political and military situation reviewing modern warfare methods and the probabilities of actual developments in the near future.

Liquid Fuel by Harold Moore, VanNostrand, N. Y., 263 pp.

A concise manual for chemists, engineers, and industrialists covering the manufacture and use of liquid fuels.

Elementary Chemistry by Imo P. Baughman, Lea & Febiger, Phila., 296 pp., $2.75.

A high school text emphasizing practical applications of chemistry in foods, drugs, and the articles of every-day life: a second edition, completely revised.

Quantitative Organic Microanalysis by Fritz Pregl, translated by E. Beryl Daw from the fourth German edition of Dr. Hubert Roth, Blakiston's, Phila., 271 pp., $5.

An enlarged, revised and modernized edition of the standard work of Pregl, founder of microanalysis, increased by some thirty-five pages.

Principles of Chemical Engineering by Walker, Lewis, McAdams, Gilliland, McGraw-Hill Book Co., 330 W. 42nd st., N. Y. C., 749 pp., $5.50.

A new edition—the third—of this standard text book, completely revised, with extensive changes in the chapters on the flow of fluids, the flow of heat, crushing and grinding, sedimentation and evaporation, drying and distillation, and a new section on dimensional analysis is added, together with new problems.

Retardation of Chemical Reactions by Kenneth C. Bailey, Longmans, Green & Co., 114 Fifth ave., N. Y. C., 479 pp., $8.00.

The first work in English on the subject. It attempts a complete historical, practical and theoretical exposition of negative catalysis and contains most valuable, complete bibliography.

The Mechanism of Contact Catalysis by R. H. Griffith, Oxford Univ. Press, London, England, 208 pp., $5.00.

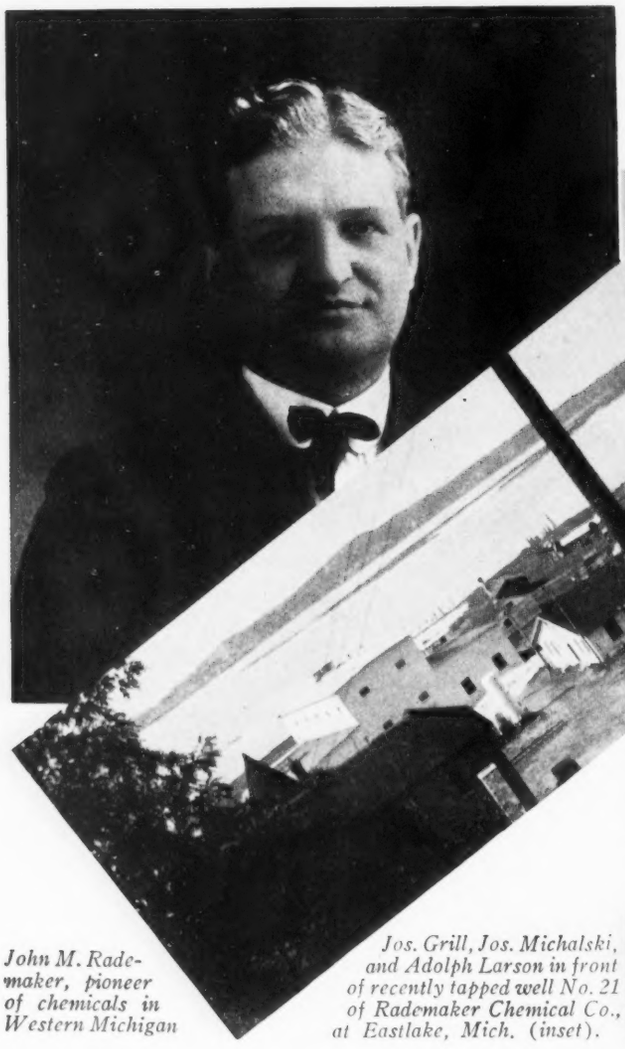
A competent survey of recent advances in the development of catalytic processes, treated from the chemical rather than the industrial point of view.

Catalysis by G. M. Schwab, translated by Hugh S. Taylor & R. Spence, D. Van Nostrand & Co., 250 Fourth ave., N. Y. C., 357 pp., $4.25.

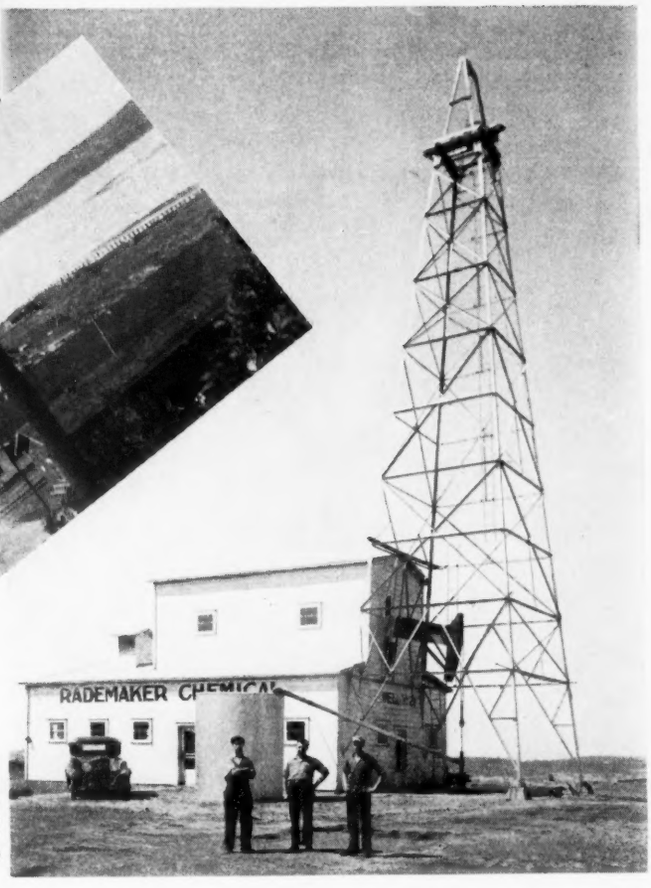
The first German edition with copious footnote references to current literature bringing work on catalytic principles, in both the homogeneous and heterogeneous systems, up to date.

Tapping the Western Michigan Brine for Bromine

By Ewald W. Pfeiffer



John M. Rademaker, pioneer of chemicals in Western Michigan



Jos. Grill, Jos. Michalski, and Adolph Larson in front of recently tapped well No. 21 of Rademaker Chemical Co., at Eastlake, Mich. (inset).

KNOWN as the largest salt producing city in the world, Manistee, Michigan, looms up as a chemical center with two young operating chemical companies lustily growing, and the birth of a third rumored. Pioneer in the field is the Rademaker Chemical Co., a lineal descendant of the old Ruggles and Rademaker salt interests.

Back in 1926, instigated by Thomas Richardson, chemical engineer, these partners began dabbling in the extraction of bromine from their western Michigan brines, but the enterprise never went beyond the pilot plant stage till after the death of Charles H. Ruggles in 1930.

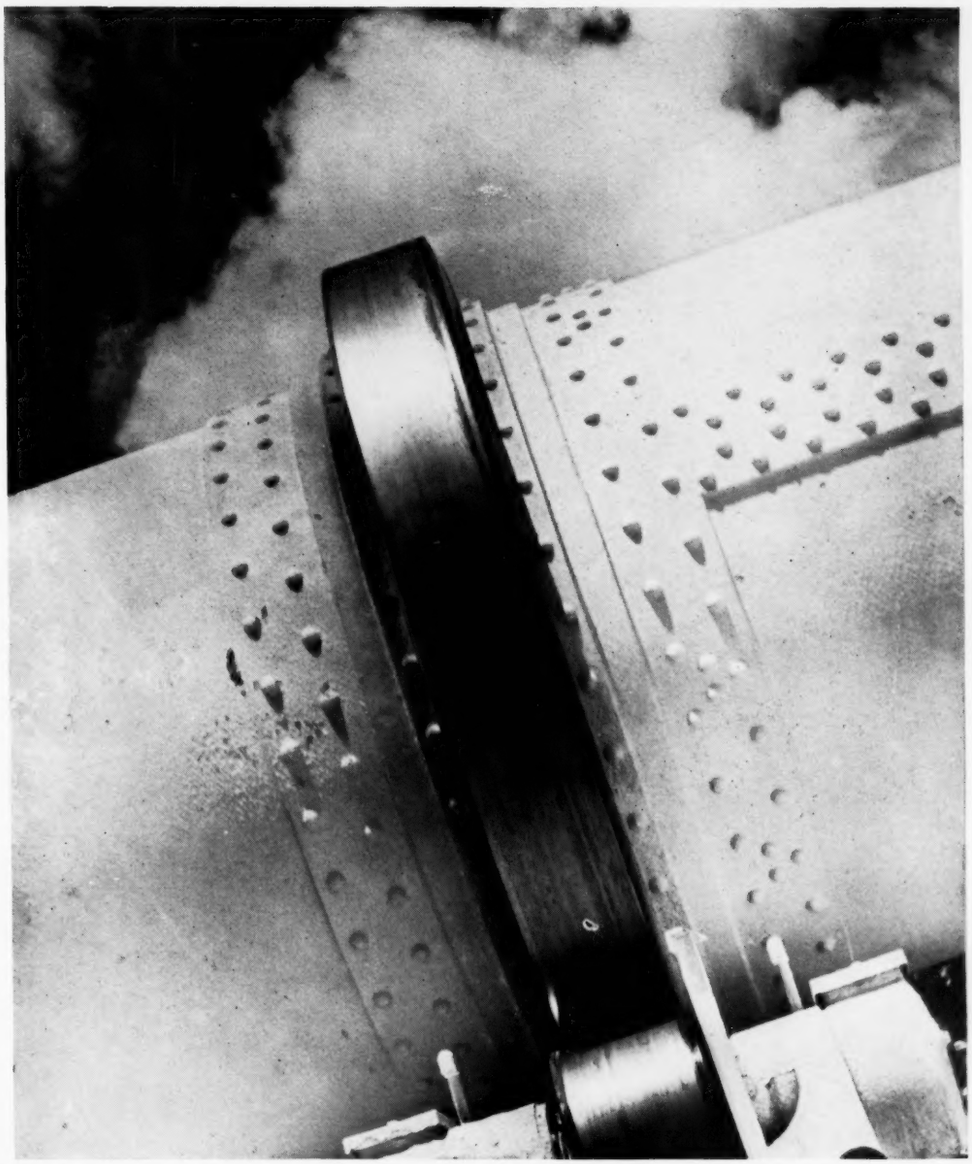
The sale of the Ruggles and Rademaker salt plant to the Morton Salt Co., by the trustees of the Ruggles estate, Ewald J. Pfeiffer and Charles McPherson, for a million and a half, left the surviving partner, John M. Rademaker, free to follow the chemical developments in which he had become most interested. He began operations in the small Peters Salt Co. plant, then idle, near Eastlake on the shores of Lake Manistee. Initial equipment was a single well, drilled to the proper depth for chemical brine and one bromine tower.

In January 1934, a larger bromine tower was added, but production was not materially increased because of the limited brine output of the lone well, No. 11. However, from 1932 until the first of the next year, the plant produced about a million pounds of bromine. Expansion was begun in 1934. New capital was injected into the enterprise, and the corporation shifted from Delaware to Michigan. A stock issue of 200,000 shares with par value of $1 was approved by the state and placed on the market by a Grand Rapids brokerage concern. All shares sold immediately.

Four wells are now in operation on the wooded lands of Eastlake which borders the Manistee National Forest. The corporation owns more than 5,000 acres of land. The brine contains bromine and magnesium, calcium and sodium chlorides. Besides producing chemicals, the new wells also provide a test for gas and oil possibilities in the region.

Although the main product of the Rademaker plant is liquid bromine, the firm also markets calcium chloride for use on the highways. The dust layer is named Bensonite, in tribute to Charles Benson, superintendent of the Michigan state highway department in this locality.

Plant Operation and Administration



Against a background of clouds and sky, the tire and bearing of a lime slaker at Mathieson's Lake Charles, Louisiana, plant make an unusual picture

A Digest of New Methods and Equipment for Chemical Makers

STANDARD BICHROMATES

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Pure Calcium Carbide Production

By H. C. Pincas, Ph.D.

So far as the production of acetylene is concerned, it would be economically important if a high-grade calcium carbide, say, a product containing 90 per cent., or even more, CaC_2, could be manufactured on a large scale and in a relatively cheap way. It is, however, well known that the routine technical process yields a product containing seldom more than 80 per cent. of the valuable ingredient. Technical carbide always contains more or less unchanged lime and carbonaceous matter, the raw materials of manufacture, and even if work is done with chemically pure raw materials on a laboratory scale, and at ordinary pressure, the final product is always contaminated by the remainder of the initial compounds.

The reason why technical carbide, or carbide prepared under precautions as indicated above, is never pure, resides in the complicated nature of its formation which can be represented by the following endothermic equations:

$$CaO + C \rightleftarrows Ca + CO, \qquad (I)$$

$$Ca + 2C \rightleftarrows CaC_2, \qquad (II)$$

combinations of these two reactions give the following:

$$CaO + 3C \rightleftarrows CaC_2 + CO \text{ and} \qquad (III)$$

$$2CaO + CaC_2 \rightleftarrows 3Ca + 2CO. \qquad (IV)$$

Which of these four reactions comes to the front depends on temperature, pressure, and on the speed at which the above equilibria have been established. The latter can be shifted into the direction of carbide formation by eliminating, from the system, the CO-gas and Ca-vapor formed in the reaction zone.

Temperature Conditions

According to the composition of the lime-carbon mixture, the eutectica formed during the carbide production lie at different temperature points. There is one eutectic point at 1,750° for a molten mixture containing 68 per cent. CaC_2, and another one at 1,800° C. for a mixture containing 35.6 per cent. CaC_2. Between these points there exists a maximum at 1,980° C. for a mixture with 52.5 per cent. calcium carbide content. At this maximum point the existence of a compound $CaO.CaC_2$ has been proved. The above temperatures are approximately in the same range as those at which the reactions (II) and (III) start. But when the carbide-calcium oxide melt, which in the routine practice has a temperature of about 2,000° C., cools down and solidifies, the thermal character of the interactions (II) to (IV) are reputed to be changeable in a way as to re-disintegrate quickly parts of the carbide into CaO, C and CO. The higher the temperature, the less calcium oxide is left in the carbide, and the purer this becomes. Theoretical considerations lead to the assumption that at about 2,300° C. and ordinary pressure, pure carbide ought to be formed. Yet, practically, for the above reasons no pure product can thus be obtained.

Owing to the gases present in the reaction sphere, the equilibria (I) to (IV) are finally shifted to the wrong side, and only by completely new methods it has been recently possible to produce a very high-grade and nearly pure calcium carbide. One of the three methods so far known consists in re-pressing and re-melting ordinary technical carbide, from which all parts that have not become molten at 2,000° C. have been mechanically removed. In this way a 94 per cent. calcium carbide has been obtained. The second method, starting with chemically pure lime and carbon, takes advantage of the facts discussed before, namely, it eliminates all the gases by evacuating the reaction zone. The result has been a 98 per cent. carbide formed at a reaction temperature of 1,750° C.

The most interesting method, however, is based on the well-known reaction:

$$CaC_2 + N_2 \rightleftarrows CaCN_2 + C, \qquad (V)$$

the formation of calcium cyanamide, the reversibility of which was first mentioned by N. Caro, in 1909. As a matter of fact, when this equilibrium is allowed to be shifted from right to left, the secondary reaction:

$$2CaCN_2 \longrightarrow CaC_2 + Ca + N_2 \qquad (VI)$$

may take place at the same time; but this, of course, does not affect the result, if only care has been taken to remove, together with the nitrogen, the Ca-vapor as well. As an example, if 2 parts of pure calcium cyanamide and 0.25 parts of pure carbon are heated in a high vacuum in a first stage below the eutectic point of the system CaC_2-$CaCN_2$, that is 1,130° C., and in a second stage at 1,250-1,300° C., a white calcium carbide of 99 per cent. CaC_2 content is obtainable.

Carbide Modifications

The investigation by X-rays of these differently produced high-grade carbides has shown them to be of a quite different crystalline structure. The Debye-Scherrer diagrams have proved that ordinary technical carbide is of a certain tetragonal structure and looks in thin layers under the microscope either red (α-carbide) or yellowish (β-carbide). Again, the 99 per cent. carbide made according to the above third method, gives another X-ray picture and may therefore be assumed to have a different structure (γ-carbide).

The specific gravity of β-carbide is about 2.5 per cent. less than that of α-carbide which may be due to a wider molecular lattice. In perfect concordance with this fact it has been found that the β form interacts with nitrogen at a greater speed than the α-form, so that at equal temperatures more calcium cyanamide can be obtained from the former than can be from the latter. The α-carbide can be converted into the β-carbide, for instance, by addition of nitrogen, or a nitrogen containing compound, such as cyanamide of calcium. The two carbide forms are only stable within certain ranges of their respective nitrogen content which, thus, rules their crystalline structure. But if all the nitrogen has been eliminated then exclusively the γ-form is obtained. The -carbide appears not to be a uniform compound as well, but rather a mixed crystal containing small amounts of sulfur or sulfur compounds; it may only be an intermediate phase in the systems CaC_2-CaS, or CaC_2-Ca. This can be taken for granted as addition of, for instance, calcium sulfate to the γ- or β-form converts them into the α-form. On the other hand the α-form prevails as well if metallic calcium is in a surplus. Thus, only the γ-form can be considered as that representing the pure white calcium carbide. It has not been possible so far to produce an equally pure α- or β-carbide.

From the above facts some interesting considerations can be drawn. First of all, the best form for the cyanamide production would be the γ-form, but as this one is not easy to produce it may be advantageous to use for this purpose the β-carbide. To this must be applied the proposition to cool down molten carbide in an N_2-atmosphere, or to add calcium cyanamide to the carbide. In another terminology, one could also say calcium cyanamide acts as a catalyst and promotes the cyanamide formation from carbide and nitrogen.

Just as the safety and convenience of the modern ocean liner inspires the confidence of most sea-going travelers, so does the snow-white purity of Diamond Bicarbonate of Soda U. S. P. enjoy the confidence of many manufacturers of self rising flours.

SODA

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On the other hand, as a pure carbide can be made from pure calcium cyanamide, it appears as if the whole carbide manufacture may, in the future, undergo a new turn. High-grade calcium cyanamide can now easily be prepared from ammonia, or ammonia forming reactants, and calcium carbonate (cf. *Chemical Age*, 1937, *36*, 339). With this product at hand the manufacture of calcium carbide from it could be achieved by heating in a vacuum. Thus, instead of first making carbide from CaO and C and subsequently converting it into calcium cyanamide, the reverse process might be carried out, and this would not only yield a purer carbide than the routine process, but would also lower the production cost.

Russian investigators have found that the manufacture of white cyanamide of calcium is cheaper than the production of the black product from carbide and nitrogen, and the difference in the cost may amount to approximately 20-25 per cent. The conversion of $CaCN_2$ into a high grade calcium carbide, at 1,800° C., must, of course, be less expensive and more economical than the production at 2,300° C. according to the highly endothermic routine method. Here the energy consumption is theoretically about 3,000 kWhs per 1,000 kgs of a 65-80 per cent. carbide. But, practically, the energy consumption rises with increased CaC_2 percentage in the melt owing to increased heat losses at the higher temperatures, which are necessary if the manufacture of a higher graded carbide is intended. Out of the 100 per cent. energy supply only about 70 per cent. is utilized for the carbide formation, the rest being consumed by heat losses and secondary reactions. From the economical standpoint it is therefore even more advantageous to manufacture, in the routine way, a 70 per cent. carbide than an 80 per cent. one. But, as has been indicated at the beginning, from the acetylene manufacturer's point of view a purer carbide is the more valuable product. The chemical foundations for the production of a high grade carbide, containing over 90 per cent. CaC_2, having been laid, it would probably depend only on apparatus for a new development to be put into practice. From *The Chemical Age*, Aug. 28, '37, p169.

Direct Manufacture Concentrated Phosphoric

The main difficulty in the direct manufacture from phosphate rock and sulfuric acid of concentrated solutions of phosphoric acid resides in the separation of the gypsum formed in the reaction, and is a problem which has interested many investigators. In order to reduce this difficulty as far as possible, the sulfuric acid is usually used in low concentrations, *e.g.*, a 30 per cent. acid, or, when using concentrated acid, the reaction mixture is diluted to a corresponding extent. Consequently, only a dilute phosphoric acid, *e.g.*, from 20 to 30 per cent. strength is obtained, the concentration of which (for example, to from 50 to 60 per cent. strength) is attended by expense and difficulty.

A German Multi-Stage Reaction Process

According to details in E. P. 470,428, issued to I. G., it is possible to obtain directly a phosphoric acid of high concentration, *e.g.*, 50 to 60 per cent. acid, by using sulfuric acid of more than about 50 per cent. strength, advantageously, and about 70 per cent. acid, at first in such amounts as are more than double than correspond stoichiometrically to the CaO-content of the crude phosphate, a temperature of at least about 80°, preferably between 80° and 100° C. being maintained during decomposition. The precipitated gypsum may then be readily filtered, for example, by means of a rotary filter, and well washed out with a little water. To the resulting liquid, which constitutes a mixture of sulfuric acid and phosphoric acid, further amounts of crude phosphate are added and the freshly-formed gypsum again filtered off. The addition of crude phosphate and separation of gypsum may be repeated as long as sulfuric acid is still contained in the phosphoric acid. During the repeated additions of crude phosphate, the temperature of at least 80° C. is always maintained in the reaction mass.

Advantages in Fluorine Recovery

It is claimed that the working method used has the special advantages that the decomposition can be carried out to a very far-reaching extent in a very short time, and that the decomposition requires a smaller total excess of sulfuric acid than had to be used according to prior processes which worked with an excess of about 10 per cent. Furthermore, the fluorine present in the crude phosphate escapes in far greater amounts in the form of volatile fluorine compounds than under the conditions of the known decomposition process working with dilute sulfuric acid.

It has already been proposed, points out the specification, to produce technically pure high percentage phosphoric acid by reacting with an excess of concentrated sulfuric acid upon successive small quantities of material containing calcium phosphate and separating between each stage the gypsum produced. In this latter process, however, no weight is attached to the recovery of the fluorine contained in the reaction liquid. According to the I. G. process, it is of great importance both to use sufficiently concentrated sulfuric acid as decomposing agent and to maintain considerably increased temperatures during the decomposition.

Claims for High Yields

In the example given in the above patent, five batches, each of 160 parts (by weight) of crude phosphate (containing 48 per cent. CaO, 34 per cent. P_2O_5, 4 per cent. fluorine and 5.8 per cent. silicic acid), are introduced into 1,000 parts of 70 per cent. sulfuric acid in a container provided with stirring means in such manner that after each addition of 160 parts of crude phosphate the whole is kept at from 90° to 100° C. for two hours in vacuo and, before the addition of the next batch of crude phosphate, is freed from the gypsum formed by filtration on a rotary filter in a thin layer, and the filter cake is washed with a little hot water. For the decomposition of the last batch of crude phosphate, a further 50 parts of 70 per cent. sulfuric acid are added. 580 parts of a relatively pure phosphoric acid are obtained containing 43 per cent. P_2O_5, corresponding to 60.5 per cent. H_3PO_4. The vapors, mainly containing silicon tetrafluoride, formed during the reaction are sucked off and absorbed in aqueous ammonia, whereby conversion to ammonium fluoride and silicic acid takes place. In the case of the first batches of the decomposition, the fluorine present in the crude phosphate is volatilized fairly completely, while the fluorine content of the latter batches of crude phosphate is only recovered to the extent of about one half. From *Chemical Trade Journal*, Sept. 17, '27, p. 253.

Synthetic Cryolite from Sodium Sulfate

Russian investigators, Nikolajew and Milaschewitsch, have introduced a modification of the process for production of synthetic cryolite from sodium or aluminum sulfate. They claim obnoxious fumes of hydrofluoric acid are not evolved. Method is based on the reaction:

$$Al_2(SO_4)_3 + 6Na_2SO_4 + 12HF = 2Na_3AlF_6 + 6H_2SO_4 + 3Na_2SO_4$$

A yield of 92% or more is claimed. Directions for commercial production are given. *Russian Journal Chemical Industry*, March. '37, p. 429.

Detection of Hydrogen Sulfide

The (British) Department of Scientific & Industrial Research has issued leaflet on detection of hydrogen sulfide, first in a series on toxic gases in industry. Obtainable from H.M.S.O., London, 3s. 6d. net.

New Equipment

Vibratory Feeder for Inspection Belts

For feeding small objects such as nuts, washers, candy pieces, buttons, and vegetables such as peas, onto a wide, moving inspection belt, a specially constructed Vibratory Feeder is being manufactured by Syntron Co., 420 Lexington Ave., Homer City, Pa. Movement of the material in a wide, single layer flow, spreads it out on the belt in an evenly spaced manner, making it easy for the inspector to spot defective, odd size or foreign objects.

Polishing and Hard Rubber Filters

In order to facilitate operations in filtering, where liquids vary from low to high viscosities, the Seitz Tank Hercules has been built to specifications allowing operation by low gravity pressure, low or high pump pressure. This tank is essentially a polishing filter, and the principle of operation is the Alluvial or Pressure Leaf system, whereby finely divided filtering material is suspended in a small portion of the unfiltered liquid, then alluviated on the fine screen of frames inside the filter. Materials generally used are varying grades of asbestos, filter-cell, or charcoal. These filters have a wide range of applicability in the wholesale chemical industries, in the pharmaceutical, beverages and food industries, and in water filtration. American Seitz Filter Corp., 480 Lexington Ave., New York City, maker, also announces a line of new hard rubber filters, which can stand extremely high temperatures, even steaming, without danger of warping the plates which are extra tough.

Forged Steel Stop Valve

Stop valves for high pressure service made from a single block of forged steel in sizes from 2½ to 8 in., and for pressures up to 2,500 lbs. per sq. in. are announced by Clees Valve & Engineering Co., New York City. They can be furnished with flanged ends or with ends prepared for any type of welding. They are also made in both angle and offset types and are produced in conformity with A.S.M.E. specifications. An unusual feature of the off-set valve, which is of the unidirectional type, is that its pressure drop approaches that of a gate valve and is considerably less than the drop in other types. A special internal by-pass is provided, which is a desirable feature for the larger valves when used in high pressure service.

"Bearing Guard" Stuffing Box Unit

Incorporating an entirely new and original type of stuffing box and bearing design which eliminates troubles previously arising from this source, the new Side Entering Propeller Type Mixer, manufactured by The Mixing Equipment Co., Rochester, N. Y., is said to have the following noteworthy features: Bearings are placed well forward to prevent shaft whip, and are mechanically separated from stuffing box; no liquid from the tank can come in contact with the bearings; stuffing box is lubricated and can be reached from outside the tank; all stuffing box wear occurs on the removable sleeve instead of on shaft. This "folded back" stuffing box design whereby the packing and bearings occupy the same linear dimensions, permits complete servicing of unit from outside of tank. Unit is being built in all machineable alloys in sizes up to Twenty H.P. For the present it will be furnished for Vee Belt Drive only. While this new design fits this unit to all types of applications, it is not intended to supplant the more simple models now available, but is offered for difficult and hazardous locations where its additional cost is justified.

Proportioning Oil Burner

The Hauck Proportioning Oil Burner, first introduced on a trial basis in January, 1937, has given good performance in metallurgical, chemical and ceramic plants. It automatically proportions and maintains correct, straight line air-oil ratio from minimum to maximum capacity, giving accurate temperature control over an unusually wide operating range. It produces controlled furnace atmosphere, giving CO_2 readings between 13 and 15 per cent. Manufacturer, Hauck Mfg. Co., 126 Tenth St., Brooklyn, N. Y., claims burner is ideally suited to automatic control, maintaining maximum combustion efficiency and perfect atomization at all positions of the burner dial. A battery of burners may be operated from one control motor, with each burner being its own individual air-oil mixer, not affecting the other proportioning burners in the group.

Recording Chart Ink

Permochart Co., Pittsburgh, Pa., announces production of a new recording chart ink, designed especially for use on the renewable permanent recording charts manufactured by this company. Many advantages are claimed.

Self-contained Injection Molding Press

The latest contribution of The Hydraulic Press Mfg. Co., Mt. Gilead, Ohio, to the plastic molding industry, is their Model 25 Injection Molding Press, first of a series to be built, which provides a die space and 10″ diameter. Press incorporates many exclusive and most desirable features of advanced design, construction and operation, hitherto unknown in conjunction with presses of this type, but proven in every respect. Machine is designed for maximum operating efficiency; is fully automatic with each function hydraulically controlled, and operates either automatically, semi-automatically, or manually. This model is being followed immediately with two other sizes, the Model 80 with a die space of 12″ x 18″, and Model 100 with a die space of 24″ x 24″.

Portable Electric Drill

An ideal tool for all-purpose work on production lines, for factory maintenance and for outside rough construction service, is the ½″ capacity portable electric drill, Model No. 12-S, one of a complete new line brought out by Syntron Co., 420 Lexington ave., Homer City, Pa. Catalog information on entire line is available from manufacturer.

Dust Tight Capacitors

A new line of Westinghouse dust tight capacitors has been developed for use in mills and plants with dust laden atmospheres to protect live parts from an accumulation of foreign materials. These capacitors consist of three component parts; namely, the capacitor unit proper, the dust tight terminal compartment, and the mounting supports. Units are available in 5 and 7½ Kva, 230 volt, 60 cycle ratings, and 5, 10 and 15 Kva, 460 and 575 volt ratings, and are designed to meet all standard N.E.M.A. and A.I.E.E. tests. They are of the Inerteen type being impregnated and filled with a fluid which will not support combustion and which will not give off gases which support combustion in any combinations with air.

U. S. Chemical Patents

A Complete Check—List of Products, Chemicals, Process Industries

Agricultural Chemicals

Manufacture tri-calcium phosphate. No. 2,095,994. Walter H. MacIntire, Knoxville, Tenn.

Production rotenone and associated substances from natural sources containing same. No. 2,096,678. Eric Wm. Fawcett, Winnington, Northwich, England, to Imperial Chemical Industries, Ltd., corp. of Great Britain.

Apparatus

Combined flocculation and sedimentation apparatus. No. 2,095,923. Geo. M. Darby, Westport, Conn., to Dorr Co., Inc., New York City.

Photo-voltaic cell comprising metallic base coated on one side with a layer of light-sensitive selenium, a light permeable layer of cadmium, and a light-permeable layer of a chemically inactive metal. No. 2,096,170. Ottmar Geisler and Josef Eisele, Nuremberg, Germany, to International Standard Electric Corp., New York City.

Apparatus for extracting oils from oleaginous materials. No. 2,096,728. Henry H. Bighouse, Cleveland Heights, O., to C. O. Bartlett & Snow Co., Cleveland, O.

Apparatus for dispensing hypochlorites. No. 2,097,092. Walter S. Bachman, Los Angeles, Calif.

Improved process of extracting native oil or fat from moisture and oil or fat-containing animal or vegetable cellular and/or fibrous material with hot volatile organic chlorinated grease solvents. No. 2,097,147. Clarence F. Dinley, Detroit, Mich., to James H. Bell, Phila., Pa.

Treatment hydrous borate minerals. No. 2,097,411. Frederick W. Corkill, Hinkley, Calif., to Pacific Coast Borax Co., New York City.

Vapor phase catalytic process and apparatus. No. 2,098,148. Carl H. B. Jarl, Royal Oak, Mich., to Beck, Koller & Co., Inc., Detroit, Mich.

Cellulose

Preparation stable organic acid esters of cellulose. No. 2,095,326. Clifford I. Haney, Drummondville, Que., Canada, to Celanese Corp. of America, corp. of Del.

Manufacture cellulose derivative, wherein cellulose is acted upon with a halogen substitution product of an olefine in which at least one halogen atom is linked to a double bond carbon atom, reaction being effected in presence of an alkali. No. 2,095,524. Leon Lilienfeld, Vienna, Austria.

Stabilizing cellulose esters with higher fatty acids. No. 2,095,822. Carl J. Malm and Chas. R. Fordyce, Rochester, N. Y., to Eastman Kodak Co., Jersey City, N. J.

Method reducing the viscosity of aralkyl ethers of cellulose. No. 2,096,114. Eugene J. Lorand to Hercules Powder Co., both of Wilmington, Del.

Manufacture photographic film of satisfactory flexibility and free from brittleness, having a cellulose organic derivative support. Nos. 2,096,616-7. Gale F. Nadeau, Rochester, N. Y., to Eastman Kodak Co., Jersey City, N. J.

Photographic film having satisfactory flexibility and free from brittleness, having a cellulose organic derivative support. No. 2,096,675. Geo. S. Babcock, Rochester, N. Y., to Eastman Kodak Co., Jersey City, N. J.

Production cellulose ethers. No. 2,096,681. Eugene J. Lorand to Hercules Powder Co., both of Wilmington, Del.

Method treating cellulosic materials. No. 2,096,743. Max Henkels, Flushing, N. Y.

Production cellulose acetate and analogous cellulose esters. No. 2,096,977. George A. Richter to Brown Co., both of Berlin, N. H.

Manufacture nitrogenous cellulose derivatives; cellulose being subjected to action of ethyleneimine. No. 2,097,120. Heinrich Fink, Wolfen Kreis Bitterfeld, and Richard Stahn, Dessau, Germany, to I. G., Frankfort-am-Main, Germany.

Preparation haze free cellulose acetate. No. 2,097,464. Carl J. Malm, Rochester, N. Y., to Eastman Kodak Co., Jersey City, N. J.

Preparation high viscosity organic esters of cellulose. No. 2,097,954. Carl J. Malm, Rochester, N. Y., to Eastman Kodak Co., Jersey City, N. J.

Production cellulose ethers; reacting on fibrous cellulosic materials with etherifying agents under anhydrous conditions in presence of aliphatic organic bases. No. 2,098,335. Henry Dreyfus, London, England.

Production cellulose ether-esters; esterifying partial cellulose ethers under anhydrous conditions in presence of an organic base. No. 2,098,336. Henry Dreyfus, London, England.

Treatment cellulosic materials; by application of a normally inactive cellulose solvent, and treatment with a solvent activating agent. No. 2,098,775. Denis de Goencz and Edmund C. Tarnuzzer, No. Adams, Mass., to Arnold Print Works, No. Adams, Mass.

Coal Tar Chemicals

Preparation 1,3-dihalo- and 1,3,5-trihalobenzenes. No. 2,095,275. Johan Pieter Wibaut, Leonardus M. F. van de Lande, and Gerrit W. A. Wallagh, Amsterdam, Netherlands, to Dow Chemical Co., Midland, Mich.

Isolation of paracresol from tar acid mixtures. No. 2,095,801. Karl Henry Engel, West Englewood, N. J., to Barrett Co., New York City.

Hydrogenation of aryl naphthylamines. No. 2,095,897. Chas. F. Winans, Akron, O., to Wingfoot Corp., Wilmington, Del.

Treatment pine tar to cause esterification of malodorous phenolic compounds and acids present in tar, and for a time to produce a product which contains no such phenolic compounds. No. 2,095,927. Herbert A. Endres, Silver Lake, O., to Wingfoot Corp., Wilmington, Del.

Process for distilling pressure tar. No. 2,095,963. Otto Behimer, Chicago, Ill., to Texas Co., New York City.

Patents digested include issues of the "Patent Gazette," from Oct. 12 through Nov. 9, inclusive.

Process concentrating and purifying acetic acid from pyroligneous products. No. 2,096,734. Charles Coutor to Societe Etablissements Lambiotte Freres, both of Premery, France.

Recovery phenol from a constant boiling mixture of phenol and water. No. 2,096,871. Geo. T. Atkins, Jr., Baytown, Tex., to Standard Oil Development Co., corp. of Del.

Method increasing hexane insoluble content of road oil derived from pressure tar from cracking operations. No. 2,096,949. Robert E. Wilson to Standard Oil Co., both of Chicago, Ill.

Preparation a mono-carboxylic acid ester of 2,4-dinitro-6-cyclohexyl phenol. No. 2,097,136. Frank B. Smith and Winfield Sunderland to Dow Chemical Co., all of Midland, Mich.

Preparation ether of 2,4-dinitro-6-cyclohexyl phenol. No. 2,097,137. Frank B. Smith and Winfield Sunderland, to Dow Chemical Co., all of Midland, Mich.

Process obtaining valuable products from a raw material of oil, tar or coal, raw material containing cyclic hydrocarbons. No. 2,097,489. Stephen A. Kiss, Brooklyn, N. Y.

Preparation anthraquinone derivatives. No. 2,097,672. Frank Lodge, Blackley, Manchester, England, to Imperial Chemical Industries, Ltd., corp. of Great Britain.

Preparation anthraquinone dithiazoles. No. 2,097,867. Alexander J. Wuertz and Wm. L. Rintelman, Carrollville, Wis., to du Pont, Wilmington, Del.

Preparation secondary aromatic amines. No. 2,098,039. Alfred G. Hill, Bound Brook, N. J., and Arthur J. Hill, New Haven, Conn., to Calco Chemical Co., Inc., Bound Brook, N. J.

Purification aqueous liquids from phenols and other accompanying substances. No. 2,098,779. Paul Hermann Gericke, Paul Herold, Helmut Kratz, and Eberhard Vogt, Leuna, Germany, to I. G., Frankfort-am-Main, Germany.

Preparation 3-amino-quinaldine derivatives. No. 2,098,927. Ludwig Schornig, Frankfort-am-Main, Germany, to General Aniline Works, Inc., New York City.

Coatings

Production synthetic coating compositions. No. 2,095,250. Albert J. Heberer, Maywood, and Wm. R. Marshall, Chicago, Ill., to Glidden Co., Cleveland, O.

Production decorated transparent sheet, using coating of pigment enamel normally susceptible to discoloration by bleeding when exposed to bituminous materials on one side, and a layer of metallic foil attached to coating. No. 2,095,269. Elmer B. Schuler, Lakewood, O., to Glidden Co., Cleveland, O.

Coating apparatus. No. 2,095,537. Carl M. Underwood, Newton Center, Mass., to Western Electric Co., Inc., New York City.

Manufacture label, comprising metallic sheet and single coat backing of a metal-adherent, synthetic resinous material. No. 2,095,879. Harvey G. Kittredge and Frank W. Williams, to Foilfilm, Inc., all of Dayton, O.

Production a highly moisture-proof packaging material having coated cellulosic base. No. 2,095,898. Wm. D. Wolfe, Cuyahoga Falls, O., to Wingfoot Corp., Wilmington, Del.

Preparation cellulosic structure, being a sheet or film suitable for use as a wrapping material. No. 2,096,122. Dorothy Bateman Maney, Old Hickory, Tenn., to du Pont, Wilmington, Del.

Process for coating surfaces containing silica in combination. No. 2,096,538. Reginald Graham Durrant, Rosetna, Marlborough, England, to Colloidal Colours, Ltd., Ynstowyn, Wales.

Application luminescent material to interior of the container of an electric lamp, coating with a suspension of luminescent material in a high viscosity binder, finally heating in presence of oxygen. No. 2,096.693. James L. Cox, Danvers, Mass., to Hygrade Sylvania Corp., Salem, Mass.

Coating roll, comprising rubber body portion, having protective coating formed from a polyhydric alcohol-polybasic acid resin. No. 2,097,315. Geo. B. Watkins to Libbey-Owens-Ford Glass Co., both of Toledo, O.

Resinous coating composition comprising vehicle subject to disfiguring mold growth in the film, and a compound of the formula R—Hg—X, yielding films of low toxicity. No. 2,097,339. Gordon Derby Patterson and Richard Stanley Shutt to du Pont, all of Wilmington, Del.

Method and apparatus for coating paper, etc. No. 2,097,601. Adolph Potdevin, Garden City, N. Y., to Potdevin Machine Co., Brooklyn, N. Y.

Stencil sheet comprising a flexible, ink permeable base sheet having a coating consisting of a plasticizer, a tempering agent, and methyl methacrylate. No. 2,097,754. Geo. Burt Bradshaw to du Pont, both of Wilmington, Del.

Stencil sheet, having fibrous base coated with composition including getalin, mono- or di-oleic acid ester of glycerin, mono- or di-oleic acid ester of ethylene glycol, oleic acid, Turkey-red oil, a heavy mineral oil, Prussian blue, organic lakes, kaolin, powdered agalmatolite, hexamethylenetetramine, and a preservative. No. 2,098,042. Shinjiro Horii, Tokyo, Japan.

Stencil sheet having fibrous base coated with composition of gelatin, oleic acid di-glyceride, glycol oleate, oleyl alcohol, a heavy mineral oil, Turkey-red oil, ultramarine blue, diatomaceous earth, water, cyclohexanol, hexamethylenetetramine, and a preservative. No. 2,098,043. Shinjiro, Horii, Kanda-ky, Tokyo, Japan.

Coal coating composition composed of blend of paraffin wax and a petrolatum. No. 2,098,232. Harvey R. Fife, Pittsburgh, Pa.

Prevention contact seizure of threaded aluminum and like metal parts, coating parts with solution including a volatile solvent, lacquer, and a stearate. No. 2,098,256. Arthur L. Parker, Cleveland, O.

Baking utensil, having on inner face glass-like continuous coating of the dried residue of a solution of an alkali metal silicate and an acid. No. 2,098,784. Herbert J. Krause, Huntington, Ind., and Paul R. Simmons, Marion, Ind., to Simmons Paper Products, Inc., Warsaw, Ind.

Dyes, Stains, etc.

Production monoazo dyestuffs. No. 2,095,468. Richard Fleischhauer, Frankfort-am-Main-Fechenheim, and Carl Theo Schultis, Bergen, near Frankfort-am-Main, Germany, to General Aniline Works, Inc., New York City.

Production azo dyestuffs. No. 2,095,484. Carl Taube, Leverkusen-I. G. Werk, and Johann Heinrich Helberger, Cologne-Mulheim, Germany, to General Aniline Works, Inc., New York City.

Production fast tints on fibers. No. 2,095,600. Charles Graenacher and Heinrich Bruengger, Basel, Franz Ackermann, Binningen, near Basel, Switzerland, to Society of Chemical Industry in Basle, Basel, Switzerland.

Preparation azo dyestuffs. No. 2,095,639. Paul Jean Andre Kienzle, Nogent-sur-Oise, France, to Compagnie Nationale de Matieres Colorantes et Manufacturers de Produits Chemiques du Nord Reunies, Etablissements Kuhlmann, Paris, France.

Production unsymmetrical indigoid dyestuffs. No. 2,096,140. Robert Stocker, Basel, and Jakob Muller, Munchenstein, near Basel, Switzerland, to Society of Chemical Industry in Basle, Basel, Switzerland.

Production indigoid vat dyestuffs. No. 2,096,141. Ernst Stoecklin, Binningen, near Basel, and Fritz Grieshaber, Riehen, near Basel, Switzerland, to Society of Chemical Industry in Basle, Basel, Switzerland.

Production dyestuffs capable of being chromed. No. 2,096,295. Wilhelm Eckert and Otto Braunsdorf, Frankfort-am-Main-Hochst, and Erich Fischer, Bad-Soden-on-Taunus, Germany, to General Aniline Works, Inc., New York City.

Basic nitrogenous condensation product, being as free base a brownish viscous oil, capable of forming water-insoluble color lakes with dyestuffs containing acid groups, obtained by interacting with a polyethylene-polyamine mixture with cyanuric chloride in an acid medium. No. 2,096,533. Otto Bayer, Leverkusen-am-Rhine, Ferdinand Muenz, Frankfort-am-Main, and Karl Keller, Frankfort-am-Main-Fechenheim, Germany, to General Aniline Works, Inc., New York City.

Manufacture quaternary ammonium compounds. No. 2,096,534. Otto Bayer, Leverkusen-am-Rhine, Ferdinand Muenz, Frankfort-am-Main, and Karl Keller, Frankfort-am-Main-Fechenheim, Germany, to General Aniline Works, Inc., New York City.

Production vat dyestuffs of the anthraquinone series. No. 2,096,688. Heinz Scheyer, Frankfort-am-Main, and Emil Schwamberger, Frankfort-am-Main-Fechenheim, Germany, to General Aniline Works, Inc., New York City.

Preparation aryl mercury carboxylates of dyes. No. 2,096,722. Carl N. Andersen, Watertown, Mass., to Lever Bros. Co., corp. of Me.

Production aryl mercury imino compounds of dyes. No. 2,096,723. Carl N. Andersen, Watertown, Mass., to Lever Bros. Co., corp. of Me.

Preparation aryl mercury alcoholates of dyes. No. 2,096,724. Carl N. Andersen, Watertown, Mass., to Lever Bros. Co., corp. of Me.

Production trimethine cyanine dyes. No. 2,096,842. Johannes Brunken, Dessau in Anhalt, Adolf Sieglitz, Frankfort-am-Main-Sindlingen, and Martin Dabelow, Frankfort-am-Main-Hochst, Germany, to Agfa Ansco Corp., Binghamton, N. Y.

Production tetrakisazo dyestuffs. No. 2,096,896. Ludwig Hauck, Leverkusen-I. G. Werk, Heinrich Clingestein, Cologne, and Fritz Graf, Leverkusen-I. G. Werk, Germany, to General Aniline Works, Inc., New York City.

Production anthraquinone-benzacridone vat dyestuffs. No. 2 097,112. Wilhelm Bauer, Leverkusen-Wiesdorf, and Hans Hoyer and Bernhard Bollweg, Leverkusen-I. G. Werk, Germany, to General Aniline Works, Inc., New York City.

A bleaching-out dye layer, consisting of a binding agent, a sensitizer, an acid compound, and a dye. No. 2,097,119. John Eggert, Leipzig-Gohlis, and Bruno Wendt and Alfred Frohlich, Dessau in Anhalt, Germany, to I. G., Frankfort-am-Main, Germany.

Process dyeing leather through use of complex copper compounds of azo dyestuffs. No. 2,097,276. Joseph Gyr to Society of Chemical Industry in Basle, both of Basel, Switzerland.

Production disazo dyestuffs insoluble in water, yielding on fiber navy blue to black dyeings of good fastness properties, particularly to light. No. 2,097,421. Paul Jorg, Frankfort-am-Main-Hochst, Germany, to General Aniline Works, Inc., New York City.

Dyestuffs for acetate silk; an aqueous dispersion of Bz-1-methoxybenzanthrone. No. 2,097,432. Peter George Carter and Reginald Harold Sennett, Blackley, Manchester, England, and Cecil Shaw, Grangemouth, Scotland, to Imperial Chemical Industries, Ltd., corp. of Great Britain.

Dye jig. No. 2,097,592. Bradford C. Gibbs, Cumberland, Md., to Celanese Corp. of America, corp. of Del.

Production azo compounds. No. 2,097,638. James P. Penny, Buffalo, N. Y., to National Aniline & Chemical Co., Inc., New York City.

Coloring acetate silk; applying an aqueous dispersion of a Bz-1-alkoxybenzanthrone in which the alkoxy group contains from 2 to 5 carbon atoms. No. 2,097,675. Cecil Shaw, Grangemouth, Scotland, to Imperial Chemical Industries, Ltd., corp. of Great Britain.

Production pigment azo dyestuffs. No. 2,097,734. August Modersohn, Cologne-Mulheim, and Werner Schleifenbaum, Leverkusen-I. G.-Werk, Germany, to General Aniline Works, Inc., New York City.

Production ice color intermediates. No. 2,097,915. Miles Augustinus Dahlen, Wilmington, Del., and Martin Edwin Friedrich, Carneys Point, N. J., to du Pont, Wilmington, Del.

Azo dyes. No. 2,098,276. Samuel Coffey, Morvan Lapworth, and Wilfred Archibald Sexton, Blackley, Manchester, England, to Imperial Chemical Industries, Ltd., London, England.

Production vat dyestuffs of the anthraquinone series. No. 2,098,590. Paul Nawiasky, Alfred Ehrhardt, and Karl Saftien, Ludwigshafen-am-Rhine, Germany, to General Aniline Works, Inc., New York City.

Production yellow substantive dyestuff for cotton; obtained by reacting with alkaline oxidizing agents containing reactive chlorine on 1-p-aminophenyl-5-carboxybenzothiazole-sulfonic acid. No. 2,098,599. Max Schubert, Frankfort-am-Main-Fechenheim, Germany, to General Aniline Works, Inc., New York City.

Production water-soluble azo dyestuffs. No. 2,098,643. Erich Fischer, Bad Soden-on-Taunus, and Richard Huss, Frankfort-am-Main, Germany, to General Aniline Works, Inc., New York City.

Production azo dyestuffs. No. 2,098,782. Heinrich Hopff and August Weickmann, Ludwigshafen-am-Rhine, Germany, to General Aniline Works, Inc., New York City.

Method grinding a chemically sensitive dyestuff; using solid carbon dioxide in process. No. 2,098,798. Irving T. Thornton, Buffalo, N. Y., to National Aniline & Chemical Co., Inc., New York City.

Explosives

Igniter composition. No. 2,095,302. Watson H. Woodford and Willi Brun, Bridgeport, Conn., to Remington Arms Co., Inc., corp. of Del.

Priming ammunition composition comprising lead nitrate and a binder containing an ester of starch. No. 2,095,333. John F. Hutchinson, Bridgeport, Conn., to Remington Arms Co., Inc., corp. of Del.

Process for stabilization of solid cellulose acetate which has been prepared in presence of sulfuric acid as catalyst. No. 2,095,334. John Edward Jones, Spondon, near Derby, England, to Celanese Corp. of America, corp. of Del.

Mining fuse, for use in connection with firing of liquid oxygen cartridges, etc., comprising fuse having combustible core and having a thin, flexible, non-viscous coating composed of mixture of tetrachloronaphthalene and chlorinated rubber. No. 2,095,574. Maurice Roumazeilles, Joinville le Pont, and Roger Harle, Pitres, France, to Societe dite Harle Freres & Co., S. A. R. L., Pitres (Eure), France.

Production explosive comprising a nitrated crude cellulosic material containing nitrogen impregnated with an explosive oxidant. No. 2,096,089. Willard de C. Crater, Newark, N. J., to Hercules Powder Co., Wilmington, Del.

Non-toxic and non-hygroscopic firework composition producing successive detonations when ignited; comprising potassium chlorate, light and heavy magnesium oxide, magnesium sulfate (hydrated), gum arabic, and a solution of sesquisulfide of phosphorus and sulfur. No. 2,096,258. Jacob D. Neuss, Woodbridge, N. J., to Essex Specialty Co., Inc., Berkeley Heights, N. J.

Nitrocellulose propellant powder, containing triacetate of alkyl-trimethylolmethane. No. 2,096,451. Paolo Parodi-Delfino, Rome, Italy.

Fine Chemicals

Manufacture chloroform by reaction of carbon tetrachloride with iron and water, carrying out reaction in presence of ammonium sulfate. No. 2,095,240. Gerald H. Coleman and Bartholdt C. Hadler to Dow Chemical Co., all of Midland, Mich.

Production negative photographic prints on a layer free from moisture and sensitized with a diazonium compound. No. 2,095,408. Jan Hendrik de Boer and Roel of Jan Hendrik Alink to N. V. Philips' Gloeilampenfabrieken, all of Eindhoven, Netherlands.

Dry, non-caking alkaline material for use in photographic developers. No. 2,095,836. Harold D. Russell, Rochester, N. Y., to Eastman Kodak Co., Jersey City, N. J.

Photographic element comprising a support and a heat sensitive layer, material for latter comprising a mercurous salt. No. 2,095,839. Samuel E. Sheppard and Waldemar Vanselow, Rochester, N. Y., to Eastman Kodak Co., Jersey City, N. J.

Gelatino-silver-halide photographic emulsion sensitized with a dye. Nos. 2,095,854-5. Leslie G. S. Brooker, Rochester, N. Y., to Eastman Kodak Co., Jersey City, N. J.

Gelatino-silver-halide photographic emulsion sensitized with a 4,4′ tricarbocyanine salt. No. 2,095,856. Leslie G. S. Brooker, Rochester, N.Y., to Eastman Kodak Co., Jersey City, N. J.

Organic mercury compound of the formula $(RHg)_xR_1$. No. 2,096,721. Carl N. Andersen, Watertown, Mass., to Lever Bros. Co., corp. of Me.

Preparation water-soluble neutral bi-metal complex compounds of aliphatic polyhydroxy monocarboxylic acids. No. 2,097,235. Hans Schmidt, Wuppertal-Vohwinkel, and Heinrich Jung, Wuppertal-Hammerstein, Germany, to Winthrop Chemical Co., Inc., New York City.

Photographic desensitizing solution; comprising an aqueous solution of a water-soluble compound selected from the group of an anthraquinone and a phenanthrenequinone, and sodium sulfite. No. 2,098,086. Walter Dieterle, Dessau-Ziebigk, Germany, to Agfa Ansco Corp., Binghamton, N. Y.

Reducing aldehydes to corresponding alcohols, by subjecting same to action of a secondary alkoxide of aluminum. No. 2,098,206. Walter H. Hartung, Lansdowne, Pa., Wm. G. Young, Los Angeles, Calif., and Frank S. Crossley, Phila., Pa., to Sharp & Dohme, Inc., Phila., Pa.

Preparation complex compounds of cinchophen and its derivatives. No. 2,098,448. Fritz W. Bramigk, Detroit, Mich.

Photographic material; using a light sensitive emulsion layer and a layer comprising a colloid and a di-p-dialkylaminotriphenylmethane dye. No. 2,098,891. Wilhelm Schneider, Dessau in Anhalt, and Gustav Wilmanns, Wolfen Kreis Bitterfeld, Germany, to Agfa Ansco Corp., Binghamton, N. Y.

Glass and Ceramics

Non-splinterable glass, comprising plurality of sheets of glass having interposed there-between one or more layers of a non-brittle reinforcing material comprising the polymerized ethyl ester of acrylic acid. No. 2,095,944. Walter Bauer and Adolf Gerlach, Darmstadt, Germany, to Rohm & Haas Co., Phila., Pa.

Method and apparatus for firing ceramic ware. No. 2,097,620. Earl J. Harris to Carborundum Co., both of Niagara Falls, N. Y.

Composite body comprising glass member which is composed of a ceramic material having as main components magnesium and titanium oxides. No. 2,098,811. Hans Pulfrich, Berlin-Wilmersdorf, Germany, to General Electric Co., corp. of New York.

Sintered ceramic material which is impenetrable by gases, adapted to be fusion-welded to glass, and to form a vacuum tight seal therewith. No. 2,098,812. Hans Pulfrich, Berlin-Wilmersdorf, Germany, to General Electric Co., corp. of N. Y.

Industrial Chemicals, Etc.

Production nitriles; reacting hydrocyanic acid with aliphatic ethers in presence of a solid hydration catalyst. No. 2,095,224. Leonid Andrussow, Mannheim, Germany, to I. G., Frankfort-am-Main, Germany.

Method drying solid material susceptible to softening at elevated temperatures. No. 2,095,232. Bernard M. Carter, Montclair, N. J., to General Chemical Co., New York City.

Manufacture ethylene methylene dioxide; subjecting formaldehyde to reaction with ethylene glycol in presence of water. No. 2,095,320. Henry Dreyfus, London, England.

Process and apparatus for oxidizing organic substances in the liquid phase. No. 2,095,338. Martin Luther, Mannheim, and Karl Goetze, Ludwigshafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Method of and apparatus for preparing in pure state acetone, ethyl and butyl alcohols, from watery solutions. No. 2,095,347. Georg Reichardt to Maschinenbau-Aktiengesellschaft Golzern-Grimma, both of Grimma, Germany.

Apparatus for emulsifying liquids. No. 2,095,356. Lawrence J. Davidson, Chicago, Ill.

Manufacture esters direct from unrefined pyroligneous liquor. No. 2,095,496. Wm. P. Gerg, Cadosia, N. Y., to Thos. Keery Co., Inc., Hancock, N. Y.

Decanting an aqueous chemical or metallurgical pulp. No. 2,095,546. Frederick F. Frick, Anaconda, Mont., to International Smelting & Refining Co., East Chicago, Ind.

Preparation hydrogenated phenanthrene homologs. No. 2,095,548. Torsten Hasselstrom, New York City, and Washington Hull, Savannah, Ga.

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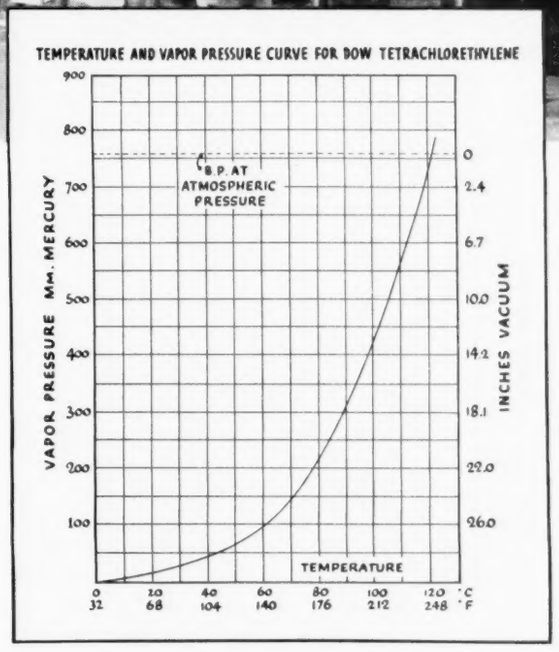

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. . PRODUCERS OF OVER 300 CHEMICAL PRODUCTS . .

Production asymmetric arseno compounds. No. 2,095,577. Karl Streitwolf and Walter Herrmann, Frankfort-am-Main, and Alfred Fehrle, Bad-Soden in Taunus, Germany, to Winthrop Chemical Co., Inc., New York City.

Distillation of liquids. No. 2,095,578. Casimir Theiler to Society of Chemical Industry in Basle, both of Basel, Switzerland.

Preparation dichloro-alkyl ethers. No. 2,095,612. Howard S. Nutting, Edgar C. Britton, and Donald H. Croope to Dow Chemical Co., all of Midland, Mich.

Preparation a phenyl-diphenyl oxide. No. 2,095,619. Wesley C. Stoesser, Midland, Mich., and Robert F. Marschner, State College, Pa., to Dow Chemical Co., Midland, Mich.

Manufacture sulfuric acid. No. 2,095,628. Bernard M. Carter, Montclair, N. J., to General Chemical Co., New York City.

Preparation sulfonated derivatives of animal and vegetable waxes. No. 2,095,778. Ralph Wechsler, Hillside, and Ernest Segessemann, Newark, N. J., to National Oil Products Co., Harrison, N. J.

Conversion trimethylamine into di- and mono-methylamine; heating mixture of trimethylamine and ammonia in presence of oxygen. No. 2,095,786. Chester E. Andrews, Overbrook, Pa., and Robert N. Washburne, Phila., Pa., to Rohm & Haas Co., Phila., Pa.

Process obtaining krypton and xenon from air. No. 2,095,809. Eugene Gomonet, Paris, France, to Air Reduction Co., Inc., New York City.

Method for treating wood oils containing constituents rendering the wood oils corrosive to ferrous containers. No. 2,095,857. Edward H. Carter and Louis J. Figg, Jr., Kingsport, Tenn., to Eastman Kodak Co., Jersey City, N. J.

Removal solvents from plastic colloids. No. 2,095,961. Harry P. Bassett, Cynthiana, Ky., to Meigs, Bassett & Slaughter, Inc., Phila., Pa.

Process sealing a graphite resister into a refractory protection tube using a carbon compound which forms carbon on pyrolysis. No. 2,095,977. Robert E. Gould, Norris, Tenn.

Production high molecular weight alcohols; reacting an ester of a high molecular weight acid with an alkali metal and a hydrolytic alcohol in presence of an aliphatic ether. No. 2,096,036. Virgil L. Hansley, Niagara Falls, N. Y., to du Pont, Wilmington, Del.

Method and apparatus for converting solid carbon dioxide to gaseous form. No. 2,096,255. Roy E. McIlrath, Wilmette, Ill.

Sodium borate compound resulting from crystallization from solution of a sodium borate with water of hydration in which the ratio of Na_2O to B_2O_3 is 3:8. No. 2,096,266. Henry Bruno Suhr to American Potash & Chemical Corp., both of Trona, Calif.

Process for obtaining furfural from pentosan-containing material. No. 2,096,353. Carl Gunnar Carlsson Skogh, Vastervik, Sweden.

Manufacture normal butyl alcohol, acetone, and isopropyl alcohol. No. 2,096,377. James F. Loughlin, New York City.

Process bleaching wood and similar cellulosic materials; contacting same with an organic nitrogenous base which does not form colored oxidation products, then contacting with an aqueous solution of peroxide. No. 2,096,400. Wolf Kritchevsky, Chicago, Ill.

Production morpholine vinyl ethers and related compounds. No. 2,096,441. Alex. L. Wilson, Pittsburgh, Pa., to Union Carbide & Carbon Corp., New York City.

Production an unsaturated aliphatic aldehyde from a saturated aliphatic aldehyde while dissolved in water. No. 2,096,637. Henri Martin Emmanuel Guinot, Melle, France.

Process and apparatus for obtaining noble gases having higher boiling points than oxygen. No. 2,096,694. Karl Erb, Frankfort-am-Main-Griesheim, Germany, to I. G., Frankfort-am-Main, Germany.

Stabilized chlorinated solvents and method of stabilization. Nos. 2,096,735-6-7. Clarence F. Dinley, Detroit, Mich., to James H. Bell, Phila., Pa.

Preparation polychlororetenes. No. 2,096,771. Eric Wahlforss and Geo. Lacy, Cleveland, O., and Leo A. Goldblatt, Erie, Pa., to Glidden Co., Cleveland, O.

Manufacture hydrated ferric chloride of at least 60% ferric chloride. No. 2,096,855. Edward Thorndike Ladd, Lewiston Heights, N. Y., to Innis, Speiden & Co., corp. of Del.

Manufacture aliphatic alcohols from olefines. Nos. 2,096,878-9. Benjamin T. Brooks, Old Greenwich, Conn., to Standard Alcohol Co.

Method obtaining finely divided carbon embedded in aluminum oxide; mixing tannic acid with aluminum chloride, and adding ammonium hydroxide to form a gel. No. 2,096,992. George E. Megow, So. Milwaukee, Wis., to Allen-Bradley Co., Milwaukee, Wis.

Manufacture hydrocyanic acid. No. 2,097,064. Emil Hene, London, England.

Apparatus for manufacture sulfuric acid. No. 2,097,131. Theodore Parker, Paw Paw, Mich.

Conversion unsaturated alcohols and/or ethers to their saturated isomers. No. 2,097,154. Herbert P. A. Groll, Oakland, and Clarence J. Ott, Berkeley, Calif., to Shell Development Co., San Francisco, Calif.

Treatment unsaturated halides and products resulting therefrom. No. 2,097,155. Herbert P. A. Groll, Berkeley, and Clarence J. Ott, San Francisco, Calif., to Shell Development Co., San Francisco, Calif.

Polymerization product; subjecting monomeric ester of an alpha-methylene monocarboxylic acid to polymerizing conditions in presence of sulfur dioxide. No. 2,097,263. Daniel E. Strain to du Pont, both of Wilmington, Del.

Preparation methyl alpha- beta- dichloroiso-butyrate. No. 2,097,264. Harold James Tattersall, Ardrossan, Scotland, to Imperial Chemical Industries, Ltd., corp. of Great Britain.

Treatment waste sulfuric acid. No. 2,097,271. Carl Paul Debuch and Ernst Markworth, Frankfort-am-Main, Germany, to American Lurgi Corp., corp. of New York.

Preparation a thiophthalide wherein at least one hydrogen atom is replaced by an aromatic substituent. No. 2,097,435. Paul R. Austin and Paul L. Salzberg to du Pont, all of Wilmington, Del.

Preparation aromatic polyether chlorides. No. 2,097,441. Herman A. Bruson to Rohm & Haas Co., both of Phila., Pa.

Preparation chlorinated derivatives of propane; reacting chlorine and 1,1-dichlorpropane-1 in liquid phase in the dark. No. 2,097,442. Oliver W. Cass, Niagara Falls, N. Y., to du Pont, Wilmington, Del.

Production boron trichloride; passing chlorine gas through mixture of an oxygen-containing boron compound and free carbon. No. 2,097,482. Harold C. Weber, Milton, Mass., and August Guyer, Zurich, Switzerland.

Soluble hypochlorite composition; being a calcium hypochlorite compound and sodium metaphosphate. No. 2,097,517. Chas. B. Durgin, Anniston, Ala., to Monsanto Chemical Co., corp. of Del.

Quaternary ammonium compounds. No. 2,097,640. Henry Alfred Piggott, Blackley, Manchester, England, to Imperial Chemical Industries, Ltd., corp. of Great Britain.

Conversion magnesium dust into compact metallic magnesium. No. 2,097,689. Konrad Erdmann, Radenthein, Austria, and Fritz Hansgirg, Konan, Korea, to American Magnesium Metals Corp., Pittsburgh, Pa.

Insulating cellulosic medium. No. 2,097,694. Frederick W. Hochstetter, Pittsburgh, Pa.

Manufacture sulfonic acids from aryl ethylenes. No. 2,097,726. Hans Grotowsky, Krefeld-Uerdingen, Germany, to I. G., Frankfort-am-Main, Germany.

Recovery terpenes from non-fractionable mixture containing a pinene. No. 2,097,743. Donald H. Sheffield, Brunswick, Ga., to Hercules Powder Co., Wilmington, Del.

Production dipentene and terpinene by isomerization of a pinene; using phosphoric acid in process. No. 2,097,744. Donald H. Sheffield, Brunswick, Ga., to Hercules Powder Co., Wilmington, Del.

Synthesis alkyl halides; bringing gaseous mixture of an olefine hydrocarbon and a hydrogen halide into contact with a catalyst. No. 2,097,750. Herrick R. Arnold, Elmhurst, and Edward T. Lessig, Wilmington, Del., to du Pont, Wilmington, Del.

Preparation anthraquinone thiophene and selenophene carboxylic acid compounds. No. 2,097,860. Ralph N. Lulek, Waukesha, and Clarence F. Belcher, So. Milwaukee, Wis., to du Pont, Wilmington, Del.

Preparation amino-carboxylic acids. No. 2,097,864. Carl Platz, Frankfort-am-Main, and Hermann Holsten, Ludwigshafen-am-Rhine, Germany, to General Aniline Works, Inc., New York City.

Production maleic acid. No. 2,097,904. Clyde H. Walters, So. Charleston, W. Va., to Union Carbide & Carbon Corp., corp. of New York.

Manufacture lime from crushed oyster shells. No. 2,097,979. Geo. F. Horton, Houston, Tex.

Recovery soluble titanium compounds from titaniferous ores. No. 2,098,025. James E. Booge, Wilmington, Ignace J. Krchma, Elmhurst, and Robert M. McKinney, Roselle, Del., to du Pont, Wilmington, Del.

Recovery soluble sulfates of iron and titanium from ilmenite ore. No. 2,098,026. James E. Booge, Wilmington, Ignace J. Krchma, Elmhurst, and Robert M. McKinney, Roselle, Del., to du Pont, Wilmington, Del.

Recovery maleic acid from fume gases containing small amounts. No. 2,098,047. Alphons O. Jaeger, Greentree, and Joseph E. Jewett, Pittsburgh, Pa., to American Cyanamid & Chemical Corp., Bridgeville, Pa.

Recovery valuable products from waste dilute, impure sulfuric acid and crystallized copperas by-products obtained in manufacture of titanium compounds from titanium ores. No. 2,097,056. Ford H. McBerty, Newark, Del., to du Pont, Wilmington, Del.

Production chlorbutadiene from gases containing vinyl acetylene. No. 2,098,089. Ernst Eberhardt, Ludwigshafen-am-Rhine, and Robert Stadtler, Heidelberg, Germany, to I. G., Frankfort-am-Main, Germany.

Preparation condensation products of 1,2,3,4-butylene-dioxides. No. 2,098,097. Heinrich Hopff and August Weickmann, Ludwigshafen-am-Rhine, Germany, to General Aniline Works, Inc., New York City.

Production glycerol formaldehyde acetal vinyl ether. No. 2,098,108. Walter Reppe, Ludwigshafen-am-Rhine, and Erich Kuehn, Mannheim, Germany, to I. G., Frankfort-am-Main, Germany.

Treatment vegetable fiber pulp; first subjecting same while in aqueous suspension to action of chlorine. No. 2,098,111. James S. Sconce, Niagara Falls, N. Y., to Hooker Electrochemical Co., New York City.

Preparation sulfuric ester of an alcohol; reacting sulfur trioxide with dioxane in presence of a suitable solvent. No. 2,098,114. Chester Merle Suter, Evanston, Ill., 25% to Procter & Gamble Co., Cincinnati, O.

Preparation and uses of substituted succinic acids and esters. No. 2,098,190. Lucas P. Kyrides, Webster Groves, Mo., to Monsanto Chemical Co., St. Louis, Mo.

Fermentation of amylaceous materials. No. 2,098,199. Hugh R. Stiles to Commercial Solvents Corp., both of Terre Haute, Ind.

Butyl-acetonic fermentation process by means of *Clostridium acetobutylicum* (Weizmann) of mashes. No. 2,098,200. Hugh R. Stiles to Commercial Solvents Corp., both of Terre Haute, Ind.

Preparation aromatic polyether chloride. No. 2,098,203. Herman A. Bruson to Rohm & Haas Co., both of Phila., Pa.

Preparation phenolic chloroethers. No. 2,098,204. Herman A. Bruson to Rohm & Haas Co., both of Phila., Pa.

Synthesis of cyclopropane. No. 2,098,239. Henry B. Haas and Geo. E. Hinds, to Purdue Research Foundation, all of West Lafayette, Ind.

Catalytic synthesis of amines. No. 2,098,289. Crawford H. Greenewalt to du Pont, both of Wilmington, Del.

Manufacture aliphatic anhydrides; subjecting corresponding aliphatic acid to thermal decomposition in presence of metaphosphoric acid. No. 2,098,334. Henry Dreyfus, London, England.

Apparatus for chemical manufacture; protective device for closing a passage against flow of liquid under pressure. No. 2,098,399. Horace D. Munson, Niagara Falls, N. Y., to Mathieson Alkali Works, Inc., New York City.

Preparation dimethylfurane. No. 2,098,592. Granville A. Perkins and Walter J. Toussaint, Charleston, W. Va., to Union Carbide & Carbon Corp., New York City.

Production thio-ethers. No. 2,098,759. Walter Reppe and Hanns Ufer, Ludwigshafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Preparation acetaldehyde and catalyst therefor. No. 2,098,842. Hans Walter to Deutsche Gold und Silber Scheideanstalt vormals Roessler, both of Frankfort-am-Main, Germany.

Production heterocyclic compounds of the furane series. No. 2,098,861. Miles A. Dahlen to du Pont, both of Wilmington, Del.

Preparation aminoacetic acid; first subjecting neck ligaments of cattle to acid hydrolysis. No. 2,098,923. Edwin T. Mertz to Armour & Co., both of Chicago, Ill.

Leather

Process successively dehairing and bating skins and hides with bacterial enzymatic liquors containing antiseptic agents to prevent putrefaction. No. 2,095,273. Leo Wallerstein and Julius Pfannmuller to Wallerstein Co., Inc., all of New York City.

Metals, Alloys, Ores

Hard and abrasion resistant alloy having a cast iron base, composed of carbon, manganese, silicon, molybdenum, aluminum, and iron. No. 2,095,325. Hyrum E. Flanders to American Rolling Mill Co., both of Middletown, O.

Manufacture stainless steel free from seams and off-color areas, adding calcium silicide to slag during process. No. 2,095,400. Charles A. Scharschu, Brackenridge, Pa., to Allegheny Steel Co., corp. of Pa.

Production galvanic coatings on aluminum or aluminum alloys. No. 2,095,519. Johannes Fischer, Berlin-Siemensstadt, Germany, to Siemens & Halske, Aktiengesellschaft, Siemensstadt, near Berlin, Germany.

Method and apparatus for metal coating. No. 2,095,718. Andrew C. Simmons, Monessen, Pa.

Pen nib consisting of palladium, copper and silver. No. 2,095,890. Alan Richard Powell and Ernest Robert Box, London, England, to Johnson, Matthey & Co., Ltd., Hatton Garden, London, England.

Welding apparatus. No. 2,095,964. Saul Blickman, New York City.

Process of ore concentration by flotation for separation of molybdenite from copper sulfide. No. 2,095,967. Earl Henry Brown, Palo Alto, Calif., to Minerals Separation North American Corp., New York City.

Production magnesium base alloy composed of aluminum, zinc, manganese, calcium, lead, and magnesium. No. 2,095,975. Edward F. Fischer, Cleveland, O., to Magnesium Development Corp., corp. of Del.

Electrolyte for use in chromium plating, consisting of a water solution of a soluble polychromate and a catalyzer. No. 2,095,995. John R. Mardick, New York City.

Manufacture semi-pyrophoric iron. No. 2,096,009. Alfred Schmid, Basel, Switzerland, to Oswald F. Wyss, Zurich, Switzerland.

Aluminum base alloy consisting of magnesium, tin, and aluminum. No. 2,096,010. Walter E. Sicha, Cleveland Heights, O., to Aluminum Co. of America, Pittsburgh, Pa.

Bearing alloy containing silver, tin, and cadmium, characterized by non-corrosiveness against lubricating oils. No. 2,096,014. Jeno Tausz, Petrolia, Pa., to L. Sonneborn Sons, Inc., corp. of Del.

Method recovering tin from tin plate; first depositing on plate a film of water, then exposing to hydrogen chloride. No. 2,096,090. David E. De Lape, Pasadena, Calif.

Welding process and apparatus. No. 2,096,171. Harry S. George, Massapequa, N. Y., to Union Carbide & Carbon Corp., New York City.

Production alloy characterized by ready emission of electrons, consisting of barium, chromium, copper, and nickel. No. 2,096,201. Donald W. Randolph, Flint, Mich., to General Motors Corp., corp. of Del.

Process for improving reflectivity of the surface of clean aluminum or aluminum alloy surface, by immersion in an aqueous solution of sodium carbonate and trisodium orthophosphate. No. 2,096,309. Alfred Norman Douglas Pullen to British Aluminum Co., Ltd., both of London, England.

Method utilizing stainless steel scrap; refining same under oxidizing slag, finally adding calcium aluminate slag, and incrementally adding chrome-nickel steel scrap. No. 2,096,317. Vere B. Browne to Allegheny Steel Co., both of Brackenridge, Pa.

Method making chromium steel from chromium steel scrap. No. 2,096,318. Vere B. Browne to Allegheny Steel Co., both of Brackenridge, Pa.

Permanent magnet of steel alloy, consisting of nickel, aluminum, titanium, and iron. No. 2,096,670. Alfred Cyril Catherall, Rotherham, England.

Reduction oxidized zinc ores. No. 2,096,779. Geo. P. Bartholomew, Essex Fells, N. J., and Edward P. Fleming, Salt Lake City, Utah, to American Smelting & Refining Co., New York City.

Treatment molybdenite concentrates. No. 2,096,846. Thos. H. Donahue and John B. Cunningham, Tucson, Ariz., assignors to Donahue and Cunningham, a co-partnership.

Recovery molybdenum from wulfenite ores or concentrates, first leaching same with sodium sulfide solution. No. 2,096,847. Thos. H. Donahue and John B. Cunningham, Tucson, Ariz., assignors to Donahue and Cunningham, a co-partnership.

Production protective layer on iron or steel, using powdered material of aluminum and silicon. No. 2,097,024. Walter Enders, Solingen-Ohligs, Germany.

An intimately associated, thoroughly intermixed, and dispersed solid composition of tungsten carbide, containing carbon and another metal. No. 2,097,140. Carl R. E. Wohrman, East Orange, and Philip Holt Estes, Rutherford, N. J., to H. A. Wilson Co., corp. of N. J.

Production age hardened alloy containing boron, a metal from the group of tungsten, molybdenum and uranium, and cobalt. Nos. 2,097,176-7. Anthony de Golyer, New York City.

Production age hardened alloy containing boron, a metal from the group of tungsten, molybdenum or uranium, and nickel. No. 2,097,178. Anthony de Golyer, New York City.

Age hardened alloy containing boron, a metal from the group of tungsten, molybdenum or uranium, chromium, and nickel. No. 2,097,179. Anthony de Golyer, New York City.

Age hardened alloy containing boron, chromium, vanadium, and cobalt. No. 2,097,180. Anthony de Golyer, New York City.

Age hardened alloy containing boron, chromium, vanadium, and nickel. No. 2,097,181. Anthony de Golyer, New York City.

Protective treatment for metallic articles; using solution of a water-soluble salt of a metal, finally treating article to formation of a metallic phosphate coating. No. 2,097,211. Herbert Tasman Davies, London, England, to Metallurgical Treatment Syndicate, Ltd., Edinburgh, Scotland.

Metallurgical slag reaction process. No. 2,097,344. Wilhelm Rohn to Heraeus-Vacuumschmelze A. G., both of Hanau-am-Main, Germany.

Apparatus for smelting. Nos. 2,097,378-9. Glenn H. McIntyre, Cleveland Heights, and Robert W. Stuart, Garfield Heights, O., to Ferro Enamel Corp., Cleveland, O.

Process alloying metals with lead by treatment with flux consisting of a lead halide and a reducible compound of a metal. No. 2,097,560. Wm. Thos. Butcher, Ilford, England, to Goodlass Wall & Lead Industries, Ltd., London, England.

Concentration of gold-bearing materials. Nos. 2,097,608-9. Stanley Tucker, London, England, to Minerals Separation North American Corp., New York City.

Tin alloy containing antimony, cadmium, and tin. No. 2,097,727. Daniel Hanson, Haselor, Alcester, and Wm. Thomas Pell-Walpole, Tipton, England, to John Campbell, Kensington, England.

Method forming stainless and wear resistant metal sheets and plates. No. 2,097,768. Frederick T. McCurdy, Kokomo, Ind., to Union Carbide & Carbon Corp., New York City.

Welding electrode formed of an alloy of zirconium and copper. No. 2,097,816. Franz R. Hensel and Earl I. Larsen to P. R. Mallory & Co., Inc., all of Indianapolis, Ind.

Process attacking a titaniferous ore with acid. No. 2,098,054. Ford H. McBerty, Newark, Del., to du Pont, Wilmington, Del.

Treatment titaniferous ore with sulfuric acid to recover a water soluble titanium compound in solid form. No. 2,098,055. Ford H. McBerty, Newark, Del., to du Pont, Wilmington, Del.

Deoxidation of copper by action of a deoxidizing flux; causing metaphosphoric acid to act upon a bath of oxidized copper. No. 2,098,063. Rene Perrin to Societe d'Electrochimie d'Electrometallurgie et des Acieries Electriques d'Ugine, both of Paris, France.

Aluminum alloy consisting of manganese, titanium, copper, magnesium, silicon, and aluminum. No. 2,098,081. John Bartow Bates to Titanite Alloys Corp., both of Euclid, O.

Manufacture chrome ore preparation for reduction by ferrosilicon in smelting to produce low carbon ferrochromium of high chromium content. No. 2,098,176. Marvin J. Udy, Niagara Falls, N. Y.

Method incorporation nitrogen in alloy steels. No. 2,098,567. Geo. F. Comstock and Viatcheslav V. Efimoff, Niagara Falls, N. Y., to Titanium Alloy Mfg. Co., New York City.

Method extracting gold or silver from ores and other products from mining and metallurgical operations. No. 2,098,835. Barclay K. Read John S. Godard, and Wilfred N. Hall, Toronto, Ont., Canada, to du Pont, Wilmington, Del.

Alloy for dental plates, consisting of palladium, silver, copper, and phosphorus. No. 2,098,879. Alan Richard Powell, London, England, to Johnson, Matthey & Co., Ltd., Hatton Garden, London Co., England.

Paper and Pulp

Apparatus for manufacture paper. No. 2,095,378. Edgar Alexander Charlton to International Paper Co., both of New York City.

Manufacture sized papers; involving use of a hydrocarbon wax-rosin mixture as sizing material. No. 2,096,129. Oscar F. Neitzke, Belmont, Mass., to Bennett, Inc., Cambridge, Mass.

Production paper having a glossy surface and mirror-like lustre. No. 2,096,973. Carl Munch, Leipzig, Germany, to Atlas-Ago, Chemische Fabrik Aktiengesellschaft, Molkau, near Leipzig, Germany.

Treatment an absorptive paper consisting entirely of cellulose with formaldehyde solution, then treating web with strong solution of mineral acid. No. 2,096,976. Geo. A. Richter and Milton O. Schur to Brown Co., all of Berlin, N. H.

Prevention and removal of foam in manufacture of paper; by introduction of a phosphatide to the aqueous suspension of fibrous material. No. 2,097,121. Richard Fromm to Lehmann & Voss & Co., both of Hamburg, Germany.

Method of and apparatus for molding paper pulp articles. No. 2,098,008. Harvey V. Mitchell, Bridgeport, Conn.

Petroleum Chemicals

Method for flash-distilling petroleum. No. 2,095,418. Elliott B. McConnell, Cleveland Heights, O., to Standard Oil Co., Cleveland, O.

Process oxidizing paraffinic hydrocarbons. No. 2,095,473. Emil Keunecke, Oppau, Germany, to I. G., Frankfort-am-Main, Germany.

Extraction of volatile hydrocarbons from solid or high boiling liquid hydrocarbons. No. 2,095,863. Nat Harris Freeman, London, England.

Conversion hydrocarbon oil. No. 2,095,952. Chas. H. Angell to Universal Oil Products Co., both of Chicago, Ill.

Separation hydrocarbon, charging material into desirable and undesirable components by action of solvents. No. 2,095,972. Warren F. Faragher, Woodbury, N. J., to Houdry Process Corp., Dover, Del.

Process for improving light hydrocarbons. No. 2,096,163. Roland B. Day to Universal Oil Products Co., both of Chicago, Ill.

Treatment hydrocarbon oils. No. 2,096,204. Jean Delattre-Seguy to Universal Oil Products Co., both of Chicago, Ill.

Conversion of hydrocarbon oils. No. 2,096,210. Kenneth Swartwood to Universal Oil Products Co., both of Chicago, Ill.

Production liquid fuel for high speed Diesel engine. No. 2,096,218. Vanderveer Voorhees, Hammond, Ind., to Standard Oil Co., Chicago, Ill.

Process cleaning dirty oils. No. 2,096,220. Lawrence S. Wilbur, Evanston, Ill.

Apparatus for dislodging filter cake from filters. No. 2,096,314. Daniel B. Banks, Drexel Hill, and Paul D. Barton, Merion, Pa., to Sun Oil Co., Phila., Pa.

Production compounded lubricants. No. 2,096,390. Arthur W. Burwell, Niagara Falls, N. Y., and Adolf Kempe, Hackensack, N. J., to Alox Corp., corp. of New York.

Conversion residuum into charging stock and coke. No. 2,096,589. Fred C. Koch to Winkler-Koch Patent Co., both of Wichita, Kans.

Art of recovering hydrocarbons. No. 2,096,700. Reading Barlow Smith, Whiting, Ind., to Sinclair Refining Co., New York City.

Refining mineral oils. No. 2,096,725. Chester E. Andrews, Overbrook, and Merrell R. Fenske, State College, Pa., to Rohm & Haas Co., Phila., Pa.

Process for increasing anti-detonating characteristics of hydrocarbon oil. No. 2,096,769. Hans Tropsch to Universal Oil Products Co., both of Chicago, Ill.

Treatment hydrocarbon oils. No. 2,096,798. Warren F. Faragher to Universal Oil Products Co., both of Chicago, Ill.

Process for improving a straight run petroleum fraction boiling within the gasoline range. No. 2,096,813. Vasili Komarewsky to Universal Oil Products Co., both of Chicago, Ill.

Refining hydrocarbon vapors by treatment with adsorbent earth. No. 2,096,820. Edwin F. Nelson to Universal Oil Products Co., both of Chicago, Ill.

Production lubricating oil of high oiliness and resistance to oxidation. No. 2,096,905. Eugene Lieber, Linden, N. J., to Standard Oil Development Co., corp. of Del.

Production lubricating oil dye stocks by contacting residua. No. 2,096,909. Malcolm Maxwell, Baytown, Tex., to Standard Oil Development Co., corp. of Del.

Method removing dichlorethyl ether and acetone from mineral oil. No. 2,096,950. Robert E. Wilson to Standard Oil Co., both of Chicago, Ill.

Production light hydrocarbons from residual hydrocarbons. No. 2,097,084. Arthur D. Smith, Park Ridge, Ill., to Jenkins Petroleum Process Co., Chicago, Ill.

Process refining oils wherein a stream of cracked gasoline distillate in liquid form is passed through a body of adsorptive material. No. 2,097,097. Wm. Thornhill Hancock, Long Beach, Calif.

Method dewaxing a wax-bearing oil. No. 2,097,127. Robert E. Manley, Beacon, N. Y., to Texas Co., New York City.

Inhibiting degradation of mineral lubricating oils in exposure to heat; incorporating with oil a degradation-inhibiting amount of tetramethyl-diamino-phenylmethane. No. 2,097,162. John M. Musselman and Herman P. Lankelma to Standard Oil Co. (Ohio), all of Cleveland, O.

Lubricating oil having green fluorescence; mixture of a petroleum lubricating oil with a heavy condensate recovered from high temperature pyrolysis of a normally gaseous hydrocarbon. No. 2,097,245. Charles C. Towne, Poughkeepsie, N. Y., to Texas Co., New York City.

Conversion raw crude oil into lower boiling hydrocarbons suitable for motor fuel. No. 2,097,412. James J. Hogan, Whiting, Ind., to Standard Oil Co., Chicago, Ill.

Production hydrocarbons of high molecular weight. No. 2,097,468. Hans Rabe, Mannheim, and Michael Otto, Ludwigshafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Propane dewaxing. No. 2,097,728. Percy C. Keith, Jr., Peapack, N. J., to Standard Oil Co., Chicago, Ill.

Apparatus for conversion hydrocarbons. No. 2,097,769. Waldemar O. Mitscherling to Neon Research Corp., both of Bridgeport, Conn.

Stabilized colored gasoline. No. 2,097,773. John Wesley Orelup, East Orange, N. J., to Patent Fuels & Color Corp., Cincinnati, O.

Process cracking hydrocarbons by means of catalysts. No. 2,097,989. Friedrich Schick and Eugen Emilius, Berlin-Mariendorf, Germany, to Deutsche Erdol-Aktiengesellschaft, Berlin-Schoneberg, Germany.

Dewaxing oils. No. 2,097,999. Eddie M. Dons and Dwight B. Mapes to Mid-Continent Petroleum Corp., all of Tulsa, Okla.

Dewaxing oils. No. 2,098,007. Dwight B. Manes and Eddie M. Dons to Mid-Continent Petroleum Corp., all of Tulsa, Okla.

Conversion and coking of hydrocarbons. No. 2,098,033. Alfred Fisher to Universal Oil Products Co., both of Chicago, Ill.

Alkylation of aromatic hydrocarbons. No. 2,098,045. Vladimir Ipatieff and Vasili Komarewsky to Universal Oil Products Co., all of Chicago, Ill.

Production alkylated hydrocarbons; reacting a paraffin and a naphthenic

Through the Centuries with Alkalies

Long before the Roman era, glass making was an advanced art in Egypt, though contrary to the general assumption, the Egyptians undoubtedly learned it from a still earlier people. Some beautiful specimens of Egyptian glassware belonging to the XVIII Dynasty are still preserved. Here we see Egyptian glass makers forming the fused sand and wood ashes (soda) into hollow vessels.

The refined soda of today contains none of the variation of quality common to the early production of natural soda. As produced under COLUMBIA'S system of rigid control, uniformity approaches the absolute; impurities, the vanishing point. COLUMBIA Control enables you to BE SURE that every shipment is like every other; every bag of soda ash, every drum of caustic, like every other. You can depend upon COLUMBIA.

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hydrocarbon at destructive alkylation temperature in presence of orthophosphoric acid. No. 2,098,046. Vladimir Ipatieff and Vasili Komarewsky to Universal Oil Products Co., all of Chicago, Ill.

Conversion hydrocarbon oils. No. 2,098,057. John Warren McCaffrey to Universal Oil Products Co., both of Chicago, Ill.

Method refining cracked gasoline. No. 2,098,059. Jacque C. Morrell to Universal Oil Products Co., both of Chicago, Ill.

Process for hydrogenating distillable carbonaceous materials. No. 2,098,400. Mathias Pier, Heidelberg, and Walter Simon and Walter Kroenig, Ludwigshafen-am-Rhine, Germany, to Standard-I. G. Co., Linden, N. J.

Process for filtering wax from oils. No. 2,098,545. Basil Hopper and Kenneth Kingman, Palos Verdes Estates, Calif., to Union Oil Co. of Calif., Los Angeles, Calif.

Pigments, Dry Colors and Fillers

Pearl essence-like pigment, comprising basic lead carbonate; being precipitate obtained by treating an aqueous solution of basic lead acetate with carbon dioxide. No. 2,097,269. Philip D. Brossman, Kearny, N. J., to du Pont, Wilmington, Del.

Manufacture litharge and sublimed litharge. No. 2,098,268. Bernard S. White, Hammond, Ind., to Glidden Co., Cleveland, O.

Production hydrous titanium oxide nuclei. No. 2,098,278. Roy Dahlstrom, East Orange, and Lonnie W. Ryan, Westfield, N. J., to National Lead Co., New York City.

Method producing a super white calcined diatomaceous earth. No. 2,098,762. Richard W. Schmidt, Redondo Beach, Calif., to Dicalite Co., Los Angeles, Calif.

Resins, Plastics, etc.

Illuminatable sign comprising electric discharge tube of neon-type encased in a support comprising a plurality of sections of a light-permeable material containing an organic derivative of cellulose. No. 2,095,291. George Schneider, Montclair, N. J., to Celanese Corp. of America, corp. of Del.

Plastic composition comprising a cellulose derivative, rosin, rosin oil, camphor, acetone, and wood flour. No. 2,095,652. Emanuel M. Silberman, Phila., Pa.

Composite laminated panel having fabric layer impregnated with a synthetic resin binder. No. 2,095,706. Carl W. Krause, Westchester, Ill., to Wilson & Co., Inc., corp. of Del.

Electrolyte for electrolytic condensers; consisting of a partially reacted condensation product of an amide and an aldehyde. No. 2,095,966. Joseph B. Brennan and Emma Leona Marsh, Ft. Wayne, Ind., Marsh assignor to Brennan.

A resinous condensation product from a formaldehyde substance and polyamides of the mixture of aliphatic polycarboxylic acids obtained by oxidizing fatty substances with nitric acid. No. 2,096,181. Michael Jahrstorfer and Hans Georg Hummel, Mannheim, Germany, to I. G. Frankfort-am-Main, Germany.

Dielectric medium comprising combination of a halogenated cyclic hydrocarbon compound and a diamyl phthalate. No. 2,096,550. Jos. Wm. Jira, Newburgh Heights, O., to Continental Carbon, Inc., Cleveland, O.

Polycoumarone composition, containing in intimate admixture a rubber hydrohalide and a polycoumarone. No. 2,096,633. Erich Gebauer-Fuelnegg, deceased, late of Evanston, Ill., by Marie Gebauer-Fuelnegg, administratrix, Evanston, Ill., and Eugene W. Moffett, Chicago, Ill., to Marbon Corp., Chicago, Ill.

Preparation derivatives of alkylolamine condensation products. No. 2,096,749. Wolf Kritchevsky, Chicago, Ill.

Manufacture a moldable thermosetting synthetic resin from a primary aromatic amine and formaldehyde. No. 2,097,109. Theodor Sutter to Society of Chemical Industry in Basle, both of Basel, Switzerland.

Mold for use in preparation of synthetic resins. No. 2,097,274. Reuben T. Fields, Arlington, N. J., to du Pont, Wilmington, Del.

Resinous composition. No. 2,097,345. Henry S. Rothrock to du Pont, both of Wilmington, Del.

Formation synthetic resins from aryl carbinols, adding sulfuric acid dilute solution during process. No. 2,097,348. Joseph Harrel Shipp to du Pont, both of Wilmington, Del.

Treatment furan derivatives to produce 1,4-polyhydroxy compounds. No. 2,097,493. Gerald J. Leuck and Fredus N. Peters, Jr., Evanston, Joseph Pokorny, Chicago, Ill., to Quaker Oats Co., Chicago, Ill.

Manufacture products of enhanced transparency to ultra violet light by use of polymerized unsaturated compounds. No. 2,097,586. John Wm. Croom Crawford, Ardrossan, Scotland, to Imperial Chemical Industries, Ltd., corp. of Great Britain.

Production vinyl compounds; involving interaction of a vinyl halide with an acid salt of succinic acid. No. 2,097,590. Henry Dreyfus, London, England.

Production cyclopentadienone condensation compounds. No. 2,097,854. Walther Dilthey, Bonn-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Manufacture artificial resins; reaction product of formaldehyde, dicyandiamide, and an organic acid. No. 2,097,895. Edmund Charles Rossiter, London, England, to American Cyanamid Co., corp. of Me.

Reaction product of cellulosic material; using reacted zinc chloride, urea and formaldehyde. No. 2,098,082. Albert Henry Bowen and Theo. Williams Dike to I. F. Laucks, Inc., all of Seattle, Wash.

Resin production. No. 2,098,361. Joseph Rivkin, Pittsburgh, Pa., to Neville Co., corp. of Pa.

Cellulose acetate composition. No. 2,098,362. Joseph Rivkin, Pittsburgh, Pa., to Neville Co., corp. of Pa.

Manufacture artificial resins; using phenol, water, methylamine, and aqueous formaldehyde in process. No. 2,098,869. Jesse Harmon and Frederick M. Meigs to du Pont, all of Wilmington, Del.

Rubber

Manufacture rubber thread and rubber thread textiles. No. 2,095,529. Carl Theodor Pastor, Krefeld, Germany.

Rubber compounding; composition comprising rubber having incorporated therein an oil-resin compound comprising acid polymerized coumarone resin and a coal tar oil. No. 2,095,630. Arthur B. Cowdery, Needham, Mass., to The Barrett Co., New York City.

Method treating rubber; breaking down in presence of carbon dioxide. No. 2,095,673. Henry R. Minor, Oak Park, Ill., to Industrial Process Corp., Saratoga Springs, N. Y.

Production pressure equalizing material for cable conductors, first dissolving washed sulfur free crude rubber in a solvent, finally producing a partially depolymerized derivative of rubber. No. 2,096,045. Archie R. Kemp, Westwood, N. J., to Bell Telephone Labs., Inc., New York City.

Production ebonite powder for molding purposes; molding intimate mixture comprising hard vulcanized rubber powder and soft vulcanized rubber powder. No. 2,096,336. Francis Norman Pickett, Westminster, London, England.

Method and apparatus for blowing sponge rubber. No. 2,096,338. Chester J. Randall, Naugatuck, Conn., to U. S. Rubber Co., New York City.

Method and apparatus for extruding rubber. No. 2,096,362. Paul W. Lehman, Grosse Pointe Park, Mich., to U. S. Rubber Products, Inc., Detroit, Mich.

Process for coagulating rubber latices by agitation with a polar-nonpolar organic liquid substance. No. 2,096,609. Friedrich Konrad Daniel, London, England, fifty-one one-hundredths to A. C. Horn Co., Long Island City, N. Y., and twenty-four one-hundredths to Frank G. Breyer, New York City.

Production rubber hydrochloride sheet material, composition comprising rubber hydrochloride and rosin. No. 2,096,632. Erich Gebauer-Fuelnegg, Evanston, Ill., and Eugene W. Moffett, Gary, Ind., to Marbon Corp., corp. of Del.

Ester gum composition comprising a rubber hydrohalide and an ester gum. No. 2,096,661. Herbert A. Winkelmann, Chicago, Ill., to Marbon Corp., corp. of Del.

Composition comprising a rubber hydrochloride, a coumarone resin, and sulfur. No. 2,096,662. Herbert A. Winkelmann and Eugene W. Moffett, Chicago, Ill., to Marbon Corp., corp. of Del.

Manufacture microporous rubber compositions. No. 2,096,933. Wm. J. Burgess, Palmyra, N. J., to Electric Storage Battery Co., Phila., Pa.

Coagulation of latex; incorporating therein a fugitive amine and a potential coagulant. No. 2,097,416. Stephen B. Neiley, Winchester, Mass., to Dewey & Almy Chemical Co., North Cambridge, Mass.

Rubber impregnated fibrous material. No. 2,097,417. Stephen B. Neiley, Winchester, Mass., to Dewey & Almy Chemical Co., North Cambridge, Mass.

Preservation rubber by treatment with compound selected from the class of arylamino substituted ethers. No. 2,097,473. Waldo I. Semon, Cuyahoga Falls, O., to B. F. Goodrich Co., New York City.

Preservation rubber by treatment with an aromatic diamine. No. 2,097,474. Waldo L. Semon, Silver Lake Village, O., to B. F. Goodrich Co., New York City.

Production deproteinized rubber from rubber latex. No. 2,097,481. Leo Wallerstein, New York City.

Manufacture rubber articles, using latex in process. No. 2,097,528. Harold A. Morton to American Anode, Inc., both of Akron, O.

Manufacture a porous, oil resistant, flexible mass; using mixture of a rubber hydrochloride, a vulcanizing agent, and a blowing agent. No. 2,098,365. Herbert A. Winkelmann, Chicago, and Wm. C. Calvert, Oak Park, Ill., to Marbon Corp., corp. of Del.

Method cyclically reclaiming and reducing to fine powder rubber-like scrap, whether raw or vulcanized, natural or synthetic; first bringing together said scrap and a vulcanizable oil. No. 2,098,385. Fred W. Hall, Nutley, and Norman R. Wilson, Belleville, N. J., to Stamford Rubber Supply Co., Stamford, Conn.

Rubber compound. No. 2,098,429. John D. Morron, Detroit, Mich., to United States Rubber Products, Inc., New York City.

Textile, Rayon

Machine for treating yarn, etc. No. 2,095,550. Peter Jenny and Georg Haupt, Wattwil, Switzerland, to Heberlein Patent Corp., New York City.

Process desulfurizing artificial silk with solution containing an alkaline metal sulfide in presence of metallic aluminum. No. 2,095,611. Homer E. McNutt, Rome, Ga., to Tubize Chatillon Corp., New York City.

Process and apparatus for production of textiles. No. 2,096,080. Allan Berne-Allen, Jr., Waynesboro, Va., to du Pont, Wilmington, Del.

Production dull-colored artificial threads and pellicles from a cellulose ester. No. 2,096,146. Fenton H. Swezey, Waynesboro, Va., to du Pont, Wilmington, Del.

Production fabrics by weaving, knitting or similar processes from yarns consisting of animal fibers and fibers containing organic derivatives of cellulose. No. 2,096,152. Leon W. Weinberg, Phila., Pa., to Celanese Corp. of America, corp. of Del.

Treatment textiles containing organic esters of cellulose. No. 2,096,154. Wm. Whitehead, Cumberland, Md., to Celanese Corp. of America, corp. of Del.

Manufacture artificial yarn, filaments, etc., from cellulosic materials. No. 2,096,607. Thos. H. Byron, Elizabethton, Tenn., to North American Rayon Corp., New York City.

Manufacture spun yarns from continuous filaments. No. 2,096,795. Henry Dreyfus, London, England.

Production pattern effects on textiles containing an organic cellulose derivative; discharging dyestuff thereon by means of a titanous aldehyde sulfoxylate. No. 2,096,797. Geo. Holland Ellis, Spondon, near Derby, England, to Celanese Corp. of America, corp. of Del.

Treatment artificial filaments, yarns, etc., having basis of an organic cellulose derivative. No. 2,096,799. Donald Finlayson and Charles Ernest Stafford, Spondon, near Derby, England, to Celanese Corp. of America, corp. of Del.

Treatment textiles having interstices; using aqueous dispersion of water insoluble resins. No. 2,097,012. Floyd E. Bartell, Ann Arbor, Mich., to Copeman Labs. Co., Flint, Mich.

Manufacture wool-like thread from artificial silk. No. 2,097,034. Gerhard Jan Meerdink, Arnhem, Netherlands, to American Enka Corp., Enka, N. C.

Machine for testing tensile strength of yarn. No. 2,097,086. Johann Paul Laetsch, Zurich, Switzerland.

Manufacture textiles impregnated with an insoluble metal compound. No. 2,097,589. Henry Dreyfus, London, England.

Apparatus for manufacture artificial films, foils, etc. No. 2,097,593. Edward Kinsella, Spondon, near Derby, England, to Celanese Corp. of America, corp. of Del.

Synthetic yarn comprising filaments of cellulose acetate-butyrate containing acetyl groups and having butyryl content of at least 10%. No. 2,098,228. Hans T. Clarke, New York City, and Carl J. Malm, Rochester, N. Y., to Eastman Kodak Co., Jersey City, N. J.

Apparatus for applying liquid to yarn while in transit. No. 2,098,333. Camille Dreyfus, New York City, and Wm. Whitehead, Cumberland, Md., to Celanese Corp. of America, corp. of Del.

Textile apparatus; cap spinning device. No. 2,098,360. Reginald Henry John Riley, Ralph Ashton, and Harold Livesey, Spondon, near Derby, England, to Celanese Corp. of America, corp. of Del.

Artificial thread treatment. No. 2,098,620. John S. Fonda, Kenmore, N. Y., and George W. Filson, Richmond, Va., to du Pont, Wilmington, Del.

Wet spinning process for artificial thread. No. 2,098,628. Geo. M. Karns, Kenmore, N. Y., to du Pont, Wilmington, Del.

Apparatus for production artificial thread. No. 2,098,633. Ovid S. Petrescu, Nashville, Tenn., to du Pont, Wilmington, Del.

Water, Sewage Treatment

Apparatus for drying and destroying sewage. No. 2,096,176. Joseph Harrington, Riverside, Ill.

Purification and utilization of sewage sludge digester gas. No. 2,097,454. Anthony J. Fischer, Jackson Heights, N. Y., to Dorr Co., Inc., New York City.

Water softening method; treatment with lime in presence of a catalytic agent comprising a carbohydrate No. 2,097,876. Charles T. Fuetterer, Akron, O.

Apparatus for treatment sewage and other waste liquors. No. 2,098,152. Herman Joseph Nicolaas Hubert Kessener, The Hague, Netherlands.

Water treating composition; consisting of a molecularly dehydrated phosphate containing finely divided metal which reacts with dissolved oxygen in water at boiler temperatures. No. 2,098,431. Everett P. Partridge, Brookside Farms, Bethel Township, Pa., to Hall Labs., Inc., Pittsburgh, Pa.

Booklets & Catalogs

Companies whose booklets are reviewed on this page will be glad to supply readers of "Chemical Industries" with copies free, provided this magazine is mentioned and the request is made on company stationery. Your business title should also be given.

Chemicals

Aqua and Anhydrous Ammonia, booklet, useful information, with particular reference to effective handling, first aid, and other pertinent data; illustrated with charts and diagrams. Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Phila., Pa.

Coal Tar Distillates and Derivatives, sheet lists specifications of company's products in this group, also descriptions and distillation range; of interest to users of coal-tar products. Republic Chemical Co., 94 Beekman St., New York City.

Givaudanian, October, 1937, feature article, "What Not To Do in Soap Perfuming." Givaudan-Delawanna, Inc., 80-5th Ave., New York City.

Neville Coal-Tar Products, folder, condensed complete listing of company's coal-tar products, uses and valuable reference data in concise form under headings: Synthetic Resins, Solvents, Plasticizing Oils, Oil, and Tar Products; contains graphic derivation chart of coal by-products. The Neville Co., Neville Island, Pittsburgh, Pa.

Paints, Varnishes, Enamels, and other products for painters' trade, booklet, 36pp., contains series of photos taken in company's laboratories, showing various devices developed for testing paint products; also features two new additions to line: flatting oil and a semi-gloss white enamel. E. I. du Pont de Nemours & Co., Wilmington, Del.

Ti-Tint, booklet, summarizes properties of new tinted titanium dioxide pigment for colored exterior paints, and describes nature of product and primary purpose for which it was developed. Krebs Pigment & Color Corp., E. I. du Pont de Nemours & Co., Wilmington, Del.

Equipment, Apparatus

Acid-Proof Cements, illustrated booklet, latest Quigley development, featuring advantages of these quick-setting cements in week-end repairs to acid tanks or where equipment must be put in service with minimum delay. Quigley Co., Inc., 56 W. 45th St., New York City.

Adsco-Corning Filler Insulation, thermal insulation of underground pipe lines, Bulletin No. 35-67, details essential features, thermal efficiency, and outstanding features of this new application of fibrous glass. American District Steam Co., No. Tonawanda, N. Y.

Alloys, booklet, 26 pp., gives 400 practical applications for Monel, nickel, and Inconel under corrosive conditions, a tabulation based on actual use in protecting purity of chemical and corrosive products; useful as a guide as to which should be considered for a given use. The International Nickel Co., 67 Wall St., New York City.

Automatic Boiler Service Units, designed for all plants using steam for processing, Bulletin 260-B14B, contains simplified selection tables, engineering data, and diagrams of typical illustrations. Turbine Pump Division, Roots-Connersville Blower Corp., Connersville, Ind.

Belt Conveyor-Bucket Elevator, handbook, 124 pp., valuable information and data, concisely presented, for engineers and others interested in conveyors. Stephens-Adamson Mfg. Co., Aurora, Ill.

Dustoscope, leaflet, illustrated, describes practical, inexpensive instrument for quickly estimating concentration of dust in the air, valuable for plant and municipal surveys; advantages listed. Service to Industry, Box 133, West Hartford, Conn.

Electric Flow Meters, Bulletin 494, illustrates applications and outlines special features. The Bristol Co., Waterbury, Conn.

Footguards, made of galvanized steel or aluminum alloy, for use in hazardous operations in plants and factories, pamphlet. Manufactured by Ellwood Safety Appliance Co., 203 Fountain Ave., Ellwood City, Pa., and distributed by Pulmosan Safety Equipment Corp., 176 Johnson St., Brooklyn, N. Y.

Full Vision Gas Masks, leaflet, newest addition to Acme line, featuring full vision lenses made of scatterproof laminated polished plate glass, which permit wearer to see, read, work, walk and observe surroundings in safety. Acme Protection Equipment Co., Inc., 2653 Koppers Bldg., Pittsburgh, Pa.

Harco Soot Remover, pamphlet, outlines modern method of cleaning and deslaging boiler heating surfaces; performs without injury to the boiler refractories or metal parts. Harco Chemical Co., 744 Broad St., Newark, N. J.

Haynes Stellite Library, booklet lists and briefly describes 18 Haynes Stellite books, reprints and folders, dealing with hard-facing alloys, cutting tools, and alloys for chemical processing equipment; summarized into five groups: "For the Machinist," "For General Maintenance," "For the Welder," and "For the Metallurgist." Haynes Stellite Co., 205 E. 42d St., New York City.

Heavy Equipment, Bulletin T-14, design and construction in Monel, nickel, and Inconel; also technical information. International Nickel Co., Inc., 67 Wall St., New York City.

Hydraulic Presses, with non-deflecting, continuous welded frames, booklet, contains information and details of actual installations, accompanied by illustrations. Lukenweld, Inc., Division Lukens Steel Co., Coatesville, Pa.

Hydraulic Red Giant Liftruck, Bulletin 116, Model S of company's line of hydraulics briefly described. Revolvator Co., North Bergen, N. J.

Industrial Lighting Equipment, Benjamin Catalog No. 26, 352 pp., includes data on latest improvements and lighting developments of past year, dealing with illumination problems of every conceivable type. Benjamin Electric Mfg. Co., Des Plaines, Ill.

J-M Industrial Products Catalog, Form G1-6A, 1937-38 edition, 64 pp., profusely illustrated, contains wealth of information and recommendations on high and low temperature insulations for every industrial need. Johns-Manville, 22 East 40th St., New York City.

Labeling Machine, illustrated folder, outlines salient features of "Labelit," developed for faster and smoother labeling. Alsop Engineering Corp., Milldale, Conn.

Laboratory Glassware and Apparatus, Catalog C for 1938, 56 pp., lists interesting line of chemical glassware, porcelain, organic chemicals, rubber tubing, thermometers, and other specialties; gives also sizes, capacities, etc., and prices. Laboratory Glassware Corp., 482 No. 5th St., Phila., Pa.

Laboratory Supplies, leaflet and Catalog D, announce line of supplies and equipment of every description. The Chemical Rubber Co., 1900 W. 112th St., Cleveland, O.

Machining Aluminum and its Alloys, 32 pp. book, illustrated; deals with cutting angles and shapes for various tools for general machine shop practice, cutting speeds, feeds, lubricants, and tool materials, also various types of tools specifically used for screw-machine practice. Aluminum Company of America, Pittsburgh, Pa.

Moly Matrix, October, 1937, features "Success of Molybdenum in Difficult Service"; also notes on the effect of graphite blacking. Climax-Molybdenum Co., 500-5th Ave., New York City.

Magnesia and Asbestos Products, catalog, quick medium of reference for industrial buyers; breaks down company's products into ten general classes; designed to be used in conjunction with comprehensive series of pamphlets and price lists already issued. Keasbey & Mattison Co., Ambler, Pa.

Monel and Nickel, booklet, devoted to uses of these metals in the chemical industries, gives technical facts and data, also photographs of adaptations. International Nickel Co., Inc., 67 Wall St., New York City.

Nickel Alloy Steels for Hand Tools, Bulletin U-3, of interest to those who use alloy steels for hand and small power tools. International Nickel Co., Inc., 67 Wall St., New York City.

Nickel and Nickel-Base Alloys, Bulletin T-13, their use in design of corrosion resistant machinery and equipment. International Nickel Co., Inc., 67 Wall St., New York City.

Norblo Square Type Air Filters, Bulletin No. 500-3, details construction, operation and specifications of these filters which are automatic and designed for continuous service. The Northern Blower Co., W. 65th St. South of Denison, Cleveland, O.

Photo-Electric Cells and Apparatus, interesting booklet on the Dr. B. Lange line. Pfaltz & Bauer, Inc., 350 5th Ave., New York City.

Polarizer-Analyzer, folder, full specifications and uses, also on new laboratory colloid mill, clarity tester, small portable accurate scale, portable viscosity tester, low priced pyrometers, etc. Laboratory Equipment Co., 146 Lafayette St., New York City.

Portable Pyrometers, Booklet 489, describes new addition to line of Pyromasters manufactured by The Bristol Co., Waterbury, Conn.

Potentiometer Pyrometers, Recorders, and Controllers, Bulletin 493, briefly described. The Bristol Co., Waterbury, Conn.

Process Industries Quarterly, Vol. 2, No. 2, Third Quarter, 1937, interesting feature, article on "The Tanner Looks at Metals," also short talk on "Use of Monel in Handling Hydrofluoric Acid." The International Nickel Co., Inc., 67 Wall St., New York City.

Pyro Micro-Optical Pyrometer, Catalog No. 90, new addition to company's line embodies advanced and unique features, illustrated. Pyrometer Instrument Co., 103 Lafayette St., New York City.

Respirators, leaflet lists various types available for use in chemical industry, also prices. Pulmosan Safety Equipment Co., 176 Johnson St., Brooklyn, N. Y.

Steels, Book E4, on Ryerson Certified Steels, reveals unique features of quality control. Joseph T. Ryerson & Son, Inc., Lock Box 8000-A, Chicago, Ill.

Steels, Cor-Ten book, 68 pp., profusely illustrated; facts, figures, and informative data on use of this low cost, high tensile steel for lightweight construction of mobile equipment. Railroad Research Bureau, U. S. Steel Corp. Subsidiaries, Frick Bldg., Pittsburgh, Pa.

Swivel Chain No. 4250, illustrated folder No. 1651, described as strong, flexible, quickly detachable conveyor chain that will travel around curves of as small a radius as 12". Link-Belt Co., 220 S. Belmont Ave., Indianapolis, Ind.

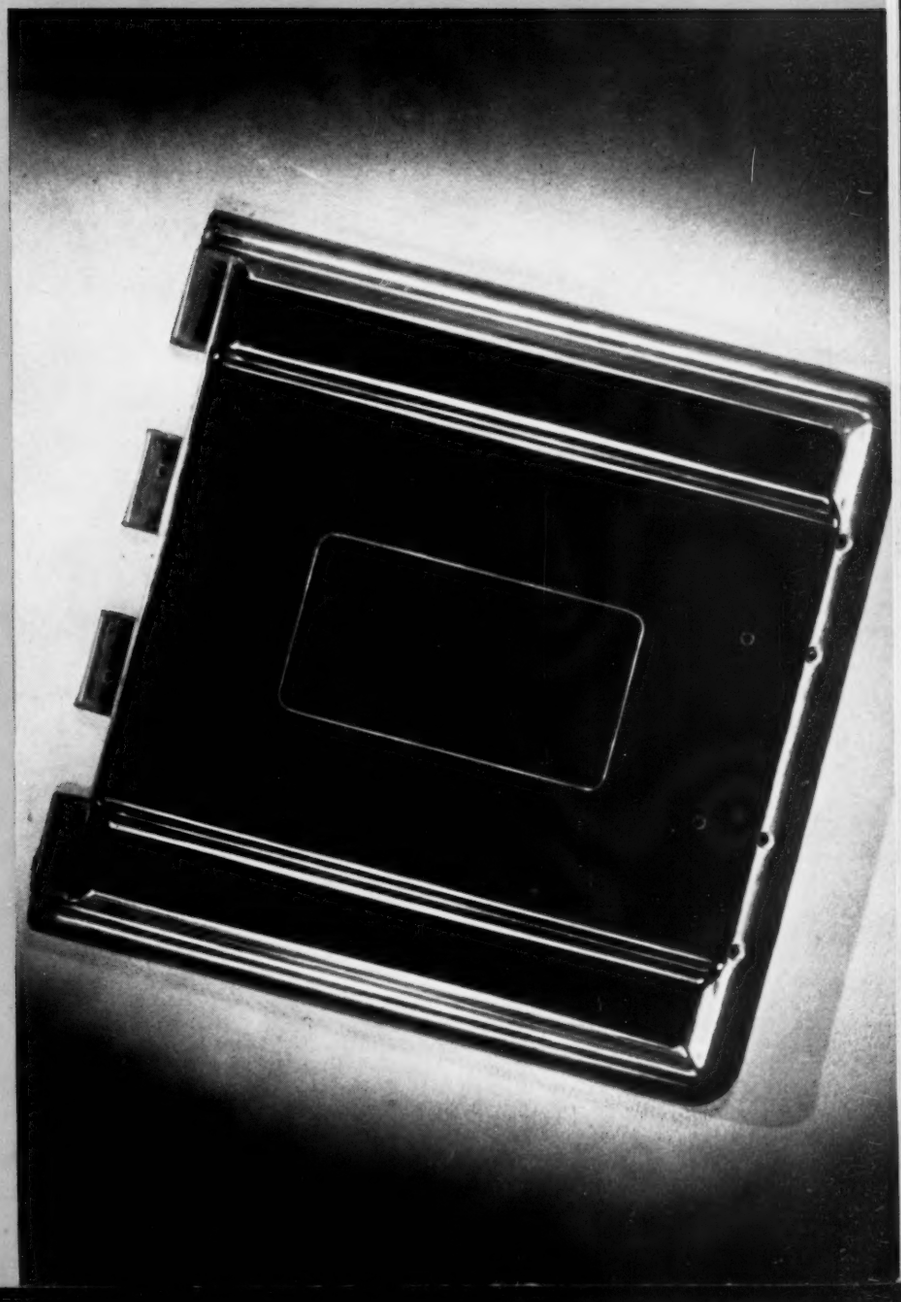
Temperature Control of Filtering Clay, Circular N33B-663(1), Rayotube Temperature Detector, controls revivifying of filtering clay from temperature of the clay itself, eliminating over and underburning of cheaper clays, with consequent increase in clay life and filtering efficiency. Manufacturer, Leeds & Northrup Co., 4901 Stenton Ave., Phila., Pa.

Link-Belt, Chicago, announces the following changes in the personnel of its management and sales organization:

Harold L. Hoefman is now manager of the plant, warehouse and sales office at Atlanta, Ga., to succeed I. H. Barbee, who died on November 4; George A. Paige, manager of the Detroit warehouse and sales office; Laurance O. Millard, district sales manager, at Pittsburgh, and Paul V. Wheeler, district sales manager, at Cleveland.

New Products and Processes

A Digest of Chemical Uses and U.S. Patents



Book cover made from a rubber-resin sandwich, a combination of rubber and Bakelite laminated, a new English development in the use of plastics

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*Pentaphen (p-Tertiary Amyl Phenol)
Monoamylamine
Diamylamine
Triamylamine
n-Monobutylamine
n-Dibutylamine
n-Tributylamine
Monoamyl Naphthalene
Diamyl Naphthalene
Mixed Amyl Naphthalenes
Normal Amyl Chloride
Mixed Amyl Chlorides
Dichloropentanes
Normal Butyl Carbinol
Iso-Butyl Carbinol
Sec.-Butyl Carbinol
Methyl Propyl Carbinol
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CONSTANTLY growing interest has been evidenced by research men in Sharples Amyl Compounds, due to the ability of these chemicals to help solve troublesome production and process problems. A great many of these chemists have already developed new processes, improved existing methods, or created entirely new products by using one of these Amyl Compounds as a starting point or "short-cut" in their syntheses.

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New Chemicals of Commerce

A catalog of new chemical products introduced during 1936-37 by the advertisers in CHEMICAL INDUSTRIES and displayed at the 16th Exposition of Chemical Industries, December 6 to 11, 1937.

ACETOACETANILID

(C_6H_5NH CO CH_2CO CH_3). Intermediate for production of Hansa Yellow dyes. Different intermediates give a dye of a different shade. Hansa Yellows are characterized by their non-toxic, stable, and unusually brilliant colors. Greater tinctorial strength of these dyes against common yellow pigments more than overbalances higher cost. U. S. Industrial Chemical Co., Inc.

ACETOACET-O-ANISIDID

(CH_3O C_6H_4NH CO CH_2CO CH_3). Intermediate for production of Hansa Yellow dyes. Different intermediates give a dye of a different shade. Hansa Yellows are characterized by their non-toxic, stable, and unusually brilliant colors. Greater tinctorial strength of these dyes against common yellow pigments more than overbalances higher cost. U. S. Industrial Chemical Co., Inc.

ACETOACET-O-CHLORANILID

(Cl C_6H_4NH CO CH_2CO CH_3). Intermediate for production of Hansa Yellow dyes. Different intermediates give a dye of a different shade. Hansa Yellows are characterized by their non-toxic, stable, and unusually brilliant colors. Greater tinctorial strength of these dyes against common yellow pigments more than overbalances higher cost. U. S. Industrial Chemical Co., Inc.

ACETOACET-O-TOLUIDID

($CH_3C_6H_4NH$ CO CH_2COCH_3). Intermediate for production of Hansa Yellow dyes. Different intermediates give a dye of a different shade. Hansa Yellows are characterized by their non-toxic, stable, and unusually brilliant colors. Greater tinctorial strength of these dyes against common yellow pigments more than overbalances higher cost. U. S. Industrial Chemical Co., Inc.

ACID ABIETIC

A purified quality of rosin acid, offering considerable advantage to manufacturers of synthetic rosin products. It is supplied in crystal form, thus making handling easier and eliminating possible contamination from barrels, etc. Industrial Chemical Sales Division, West Virginia Pulp & Paper Co.

ACID ADIPIC

Du Pont is the first manufacturer to produce this yellowish crystalline powder on a commercial scale in this country. It is soluble in alcohol, ether and hot water; used in medicines; in synthetic resins as a plasticizer; and as an intermediate for various syntheses. E. I. du Pont de Nemours & Co.

ACID ASCORBIC

1-Ascorbic Acid (Vitamin C) is made from dextrose or grape sugar. Is a fine crystalline, white to yellowish-white powder, odorless, non-hygroscopic and stable under ordinary storage conditions. Should be protected from contact with moisture, copper and alkaline substances. The tests prescribed by the current NEW AND NONOFFICIAL REMEDIES indicate that it is chemically identical with Cevitamic Acid or VITAMIN C. Chas. Pfizer & Co., Inc.

ACID LEVULINIC

CH_3-CO-$(CH_2)_2$-COOH. M. W. 116.06 Colorless leaflets. M. P. 33 ° C. B. P. 245-246 ° C. Sp. Gr. 1.137 at 24 ° C. Soluble water, alcohol, ether. Uses: manufacture esters and medicinal preparations, particularly calcium levulinate. Grades: Technical (brown liquid) 98.99% acid. Containers: carboys. Niacet Chemicals Corp.

ACID METAPHOSPHORIC (TECH.)

(HPO_3) Molecular weight 80. Glassy solid, colorless to light amber, very hygroscopic. Soluble in water with decomposition. Uses: phosphorylating agent, dehydrating agent, dental cements. Victor Chemical Works.

ACID MONOAMYL PHOSPHORIC

This is a heavy brown viscous liquid at ordinary temperatures. It is strongly acid and has the characteristic odor of amyl alcohol. It is completely miscible with six parts of water. Its uses are in metal cleaning and in the removal of rust from ferrous metals and as a flux in soldering. Victor Chemical Works.

ACID NAPHTHENIC SLUDGE *O* GRADE

Mineral oil (%), 45-50; naphthenic acid (%), 45-50; reaction, acid; acid content, 6%; acid number, 80. Naphthenic Acid Sludge is a by-product from distillation of White Mineral Oils. Owing to excellent emulsifying properties, it is used as emulsifying and bodying agent in manufacture of cutting oils, industrial soaps, textile oil specialties, etc. S. Schwabacher & Co., Inc.

ACID-PROOF FLOOR

Tegul-VITROBOND is melted and poured into the joints between acid-proof brick or tile, and VITROLASTIC is applied cold as a mortar. In many instances it has been found advantageous to set the bricks in Tegul-VITROBOND and point the top 1/8" of the joint with VITROLASTIC, thereby obtaining a perfectly smooth joint. Novel features of Tegul-VITROBOND and VITROLASTIC jointed tile or brick floors are:—1. Floor is not merely acid resisting but is proof against the attack of acids of any concentration. 2. Compressive strength, tensile strength, resistance to abrasion and mechanical impact of these cements are equal to that of acid-proof brick or tile. 3. Tegul-VITROBOND and VITROLASTIC have an adhesion strength to acid-proof brick or tile of 300 pounds per inch. 4. Defects caused by shrinkage in ordinary jointing materials are entirely eliminated. 5. The absorption of acid or water by Tegul-VITROBOND or VITROLASTIC is less than 1%. (Portland cement mortar has an absorption of 15% or more.) This low absorption is of particular importance to dairies, and food plants where sanitary conditions are of utmost importance, and to chemical and metal working industries where perfect protection must be afforded for the under supporting structures of buildings. 6. Development of a tile having a non-skid surface has proved of value for some applications. Tegul-VITROBOND is manufactured by the Atlas Mineral Products Co. of Mertztown, Pa. Tegul is a copyright name given to these products by the Texas Gulf Sulphur Co. VITROBOND is a distinctive name coined by the Atlas Mineral Products Co. to identify their products. Texas Gulf Sulphur Co.

ACID PHOSPHORIC

(75% Pure Food Grade.) Manufactured from elemental phosphorus produced by the electric furnace method. Meets all U. S. Pure Food Law requirements. Purity: 99.99%. Uses: In manufacture of glycerophosphates, pharmaceuticals, phosphate chemicals, acidulating agent in preparation of essences, jellies, mineral waters, soft drinks, sugar defecant and clarifier. The American Agricultural Chemical Co.

ACID PHOSPHORIC

(Reagent grade). Manufactured from our own elemental phosphorus produced by the electric furnace method. This acid conforms to "AA Quality" standards; comparable to A.C.S. specifications for Reagent grade. Purity: 99.99%. Uses: General laboratory reagent and manufacture of special phosphates. The American Agricultural Chemical Co.

ACID PHOSPHORIC

(85% USP Syrupy). Manufactured from elemental phosphorus produced by the electric furnace method. Meets all requirements for USP, as well as all U. S. Pure Food Law requirements. Purity: 99.99%. Uses: In beverages, medicine and manufacture of pharmaceuticals. The American Agricultural Chemical Co.

CHEMICAL INDUSTRIES
149 Temple Street, New Haven, Conn.

I would like to receive, without obligation, more information on the following *New Chemicals of Commerce*:

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To receive the above information the following must be filled in completely.

Name..... **Position**.....

Company .....

Full Address .....

ACID PHOSPHORIC

(90% USP Syrupy). Manufactured from elemental phosphorus produced by the electric furnace method. Meets all requirements for USP, as well as all U. S. Pure Food Law requirements. Purity: 99.99%. Uses: Similar to 85% USP Syrupy in cases where specific conditions require higher strength of H_3PO_4. The American Agricultural Chemical Co.

ACID PHOSPHOROUS

(H_3PO_3) This is a moist, colorless crystalline acid which melts somewhat below 73° C and decomposes when heated to 200° C, liberating phosphine. It forms mono and dibasic salts. Extremely soluble in water and very hygroscopic. Used as a reducing agent and in the preparation of phosphites. Victor Chemical Works.

ACID PYROPHOSPHORIC (TECH.)

Viscous liq., white to light amber in color, composed of pyro phosphoric acid with minor amounts of ortho and metaphosphoric acids. It is hygroscopic, and soluble in water with decomposition. Uses: phosphorylating agent, dehydrating agent. Victor Chemical Works.

ACID TETRA PHOSPHORIC

A concentrated phosphoric acid containing 84% P_2O_5. It makes phosphoric acid available in a more concentrated form and effects economies to user. Monsanto Chemical Co.

ALANINE

(AMINO PROPIONIC ACID) $CH_3CH(NH_2).COOH$. M. W. 89.06. M. P. 297° C. White cryst. material. Appearance like granulated sugar. Less sweet than Glycocoll, odorless. No chlorides, sulfates, or heavy metals. Uses: in medicines, tonics, buffers, synthetics. Grades: C. P. Ameico Chemicals, Inc.

ALCOHOL, CETYL PURE

Melting pt., 48-49° C.; boiling pt., 314-322° C.; ash content, 0.0; acid value, 0.0; refractive index @ 60° C., 1.4345; saponification value, 0.0; alcohol content by acetylization, 100%. An odorless 100% pure grade of Cetyl Alcohol made from Spermaceti. Designed especially for use in cosmetic preparations, notably creams. Cetyl Alcohol improves the texture and smoothness of the cream, giving the skin a pronounced satiny finish. Givaudan-Delawanna, Inc.

ALCOHOL, TETRAHYDRO-FURFURYL

Produced by high pressure hydrogenation of Furfural, this new product is a stable and virtually water-white liquid, boiling at 175-180° C. and having a specific gravity of 1.055. Uses already developed depend upon its exceptionally good solvent properties, wetting effect, and the plasticizing action when used in its present form, or preferably, after conversion into esters, ethers, etc. Quaker Oats Co.

ALPHA-NAPHTHYLISOTHIO-CYANATE

White, odorless and tasteless crystals, M.P. 55.5° C., B.P. 142° C. at 6mm vacuum. Almost insoluble in water, easily soluble in most organic solvents. This new compound has properties which make it useful as a very effective and economical synthetic organic insecticide, particularly for household purposes. Kessler Chemical Corp., subsidiary of American Commercial Alcohol Corp.

"ALPINE VIOLET EXTRA"

Has odor of True Mountain Cyclamen; used for adding lift and mellowness to bouquets and for enhancing character of all types of perfumes, creams and toilet waters. "Alpine Violet Extra" is approximately 5 times stronger than hydroxycitronnellal yet it is very stable, highly resistant to alkali and does not irritate skin. An ideal adjuvant for unusual perfumes. E. I. du Pont de Nemours & Co.

ALUMINUM FLUOFORMATE SOLN 25%

Water-white liquid, sp. gr. 1.19 at 30° C, pH 3.0. Decomposes when heated to dryness losing some formic acid to give a film which is transparent but changing to white after prolonged heating. Heated product is insoluble in water. Uses: Mothproofing textiles, waterproofing, insecticide. Victor Chemical Works.

AMMONIUM BICHROMATE, PHOTO GRADE

This is a dry, free-flowing product of uniform crystal size. Being free of fines, the possibility of caking is eliminated as is the nuisance of dust in handling. It gives a clear solution, free of impurities such as NaCl, Na_2SO_4, Aluminum and Calcium. Prior Chemical Corp., sole selling agents, Standard Chromate Division, Diamond Alkali Co.

AMMONIUM SULPHORICINOLEATE

Viscous liquid neutral in reaction, miscible with oils, dispersible in water. Finds use as an emulsifying agent and finds application in glues and other industrial emulsions where a fixed alkali is undesirable. The Beacon Co.

"ARIDEX"

Applied to fabrics to render them water resistant, spot and stain resistant too. Covers individual fibers of the cloth with an invisible film, yet permits normal, healthful circulation of air. "Aridex" does not affect appearance, handle or feel of fabrics; in many cases it improves finish and tends to prevent running of colors. Treated fabrics will remain water repellent through several careful launderings. E. I. du Pont de Nemours & Co.

AUTOMOTIVE "PYRALUX" FINISH

A nitrocellulose product especially developed to meet a specific need by combining certain features of lacquer and synthetic resin enamels. Has a high initial gloss, with good build and flow-out, and dries with a speed approximately that of "Duco" finish. Chalking rate is comparable to that of "Dulux" enamel, thus making it a satisfactory finish for touching-up synthetic enamels and for complete repainting of used cars. Automotive "Pyralux" is availab'e in black and 26 popular shades. E. I. du Pont de Nemours & Co.

BARTYL "A"

Specific gravity @ 25° C., 1.014; weight per gal., 8.4 lbs.; refractive index @ 20°, 1.519. Odorless chemical compound developed to retard skinning of paint, varnish and printing ink formulations. Bartyl "A" behaves similarly to the best anti-skinning agents available but has and leaves no odor in the film during or after drying. Givaudan-Delawanna, Inc.

32% SOL. BASIC ALUMINUM ACETATE

Concentrated 32% solution of Basic Aluminum Acetate in water; water white to pale yellow. Uses: manufacture of water repellent treatments for textiles, paper, leather; color lakes, paints and varnishes; mordant in dyeing and printing; embalming. Containers, barrels (475 lbs.); kegs (45, 90 lbs.). Niacet Chemicals Corp.

B. B. ALKALI

New product for bottle washing machines, particularly of the pressure type. Keeps jets free from calcium carbonate deposits in sections where hard water conditions prevail. Prepared in dustless flake form. Properties of constituents: (a) Caustic Soda for germicidal and saponifying abilities; (b) Sodium Metasilicate for emulsifying and dispersive action. Diamond Alkali Co.

BC VOLCLAY

A finer air floated high colloidal bentonite than heretofore available. Particle size, dry, 100% minus 5 microns. Particle size when dispersed in water, 94% minus 1 micron. American Colloid Co.

BEETLE 227-8

Urea formaldehyde resin of the thermosetting type. Finds major interest in industrial enamels to bake in the temperature range of 250 to 350°F. It is characterized by excellent color retention on baking or ageing and is, therefore, adaptable for finishing refrigerators, stove parts, kitchen and bath room cabinets and metal novelties because it imparts a porcelain-like scratch-resistant hardness. BEETLE 227-8 bakes down to an exceedingly hard film so that it is frequently desirable to plasticize it to secure additional distensibility and adhesion. American Cyanamid & Chemical Corp.

BEETLE 592-8

Urea formaldehyde resin of the thermosetting type. Finds major interest in industrial enamels to bake in the temperature range of 250 to 350°F. It is characterized by excellent color retention on baking or ageing and is, therefore, adaptable for finishing refrigerators, stove parts, kitchen and bath room cabinets and metal novelties because it imparts a porcelain-like scratch-resistant hardness. BEETLE 592-8 is suitable for use by itself without mixture with alkyd resins or other plasticizing agents. American Cyanamid & Chemical Corp.

BENZOQUINONE

Produced by a new process which insures an improved quality and proper color. Used in the wool and leather industries. Zinsser & Co.

BLUE 123

A sodium salt of disulfonic acid of m'hydroxy-tetraethyldiaminotriphenylcarbinol anhydride. It is a blue powder which dissolves in water with a greenish blue color in diluted form to a marine blue color. Only recently adopted for use in permanent wave solutions. Interstate Color Co.

BORIRESIN

Viscous water soluble synthetic resin of amber color. Miscible with polyhydric alcohols and will not freeze or crystallize at —10° C. Forms glossy, transparent films which are non-tacky and become extremely hard. The Beacon Co.

BRILLIANT YELLOW 101

A sodium salt of 2:4 dinitro-alpha-naphthol-7-sulfonic acid. Has a light yellow or orange color in powdered form but dissolves in water giving a lemon or greenish yellow solution. Only recently adopted for use in permanent wave solutions. Interstate Color Co.

BUTYL CATECHOL, TERTIARY

$C_6H_3(OH)_2C(CH_3)$, Sp. gr. 1.043-1.408 at 60° C.; Melting pt., not less than 33° C.; 147-152° C. at 10-12 mm. Proposed Uses: Patented process for removal of gum inhibitor and other easily oxidized oils from gasoline. Dow Chemical Co.

BUTYL CHLORIDE, NORMAL

C_4H_9Cl. Primary Normal Butyl Chloride is a clear, water-white liq., insoluble in water. It has a boiling point of 77.9° C. A number of commercially interesting organic syntheses are possible with this raw material. It reacts with aniline, naphthylamines and other organic amines to produce mixed alkyl and aryl derivatives. The Sharples Solvents Corp.

CALCIUM LEVULINATE

$Ca(CH_3\text{-}CO\text{-}(CH_2)_2COO)_2.2H_2O$. White powd., soluble water, insoluble ether. Used in calcium therapeutic treatment of various disorders. Grades: C. P.; Containers: fiber, ply-wood, various sizes. Niacet Chemicals Corp.

CARBON BLACK, COMPRESSED

Compressed Carbon Black made from uncompressed carbon black by hydraulic pressure, and used principally in the rubber industry. Compression is resorted to in order to reduce dusting when the black is mixed with rubber. Continental Carbon Co.

CARBON BLACK, DUSTLESS

Dustless Carbon Black is in small, spherical pellets of approximately same apparent density as the Compressed Black, and serves same purpose in the rubber industry in reducing dust nuisance. In addition, Dustless or Pellet Black can be shipped in bulk in tank cars and handled at receiving points in conveying systems, thus eliminating paper bags and labor of handling. Continental Carbon Co.

CARBON BLACK, UNCOMPRESSED

Uncompressed Carbon Black, fluffy, and used principally in Paint, Ink and Varnish industries. Continental Carbon Co.

CARBONATE OF POTASH "FF" 47/48% (LIQUID)

A sparkling, water-white product, free from sediment and objectionable impurities, guaranteed 47% Actual K_2CO_3—used in place of the Calcined form of Carbonate of Potash. Domestically produced from domestic raw materials by Innis, Speiden & Co.

CARBONATE OF POTASH 83/85% (HYDRATED)

A fine crystalline form of Carbonate of Potash testing 83/85% K_2CO_3—free running. Produced entirely from American raw materials. Used by glass, soap, textile and chemical manufacturers. Innis, Speiden & Co.

CARBONATE OF POTASH 98/100% PURE (CALCINED)

A very high grade American product produced from carefully selected American raw materials. Uniformly white, fine granular and free of dust, exceptionally free from impurities, produced especially for chemical, glass, textile and soap industries. Innis, Speiden & Co.

CARBOSEAL*

Increasingly widespread use by gas companies of dry gases such as natural gas, has resulted in an increase in gas losses due to leakage resulting from drying out and shrinking of the jute packing in the bell and spigot joints of cast iron gas mains. "Carboseal" anti-leak permanently moistens and swells the packing, thus correcting leakage in the joints and reducing gas losses. "Carboseal" anti-leak is applied to the gas main without turning off the customers in sections of main being treated. Imput connections are required only at the high points in the mains. Carbide and Carbon Chemicals Corp.

CAUSTIC POTASH "FF" 45% (LIQUID)

Sparkling, water-white, free of iron and very low in other objectionable impurities, guaranteed 45% actual KOH. Uses, chemical specialties, soap, shaving cream, cosmetics and textiles. Innis, Speiden & Co.

CELITE NO. 110

A new type light weight Amorphous Silica Inert Extender for paints. This grade is the whitest, easiest grinding, good suspending, readily available inert extender for paints. It gives great bulk, high body, good brushing, leveling and application properties. Recommended for both exterior and interior house paints. Johns-Manville.

CELITE NO. 165S

Amorphous Silica Mineral Flatting Agent. An especially prepared grade of diatomaceous silica which gives a velvety type of flatness to clear varnishes, lacquers or enamels. It produces a smooth finish, tough and hard, yet flexible, which does not bloom or become glossy when rubbed or cleaned. Johns-Manville.

CERYL WAX "O"

Similar to Ceryl Wax "Z" but darker in color. The Beacon Co.

CERYL WAX "Z"

A new self-emulsifying synthetic wax which is characterized by the unusual property of having its emulsions dry to a very extreme high gloss and become waterproof—entirely impervious to water. The Beacon Co.

CHLOR HYDROQUINONE

Known as Adurol. Specially pure product and completely soluble. Used instead of Metol in photographic development work by people who have an idiosyncrasy for Metol which gives them a rash. For new cameras that produce very small snapshots and equally small negatives, the fine lines and fine grain are brought out much more perfectly when enlargements are made if Chlor Hydroquinone is the developer used. Zinsser & Co.

CHLOROPHYLL (Oil Soluble)

The green substance in all vegetation. When extracted and in concentrated form, it is a beautiful and distinctive green. It has long been used for coloring in drugs, cosmetics, and foods where the use of mineral or other types of dye coloring is not permissible. It is almost identical with the hemin in human blood and this fact has led to its use therapeutically. R. W. Greeff & Co., Inc.

CHLOROPHYLL (Paste Soluble)

The green substance in all vegetation. When extracted and in concentrated form, it is a beautiful and distinctive green. It has long been used for coloring in drugs, cosmetics, and foods where the use of mineral or other types of dye coloring is not permissible. It is almost identical with the hemin in human blood and this fact has led to its use therapeutically. R. W. Greeff & Co., Inc.

CHLOROPHYLL (Water Soluble)

The green substance in all vegetation. When extracted and in concentrated form, it is a beautiful and distinctive green. It has long been used for coloring in drugs, cosmetics, and foods where the use of mineral or other types of dye coloring is not permissible. It is almost identical with the hemin in human blood and this fact has led to its use therapeutically. R. W. Greeff & Co., Inc.

CLARINOL*

A substitute for olive oil, a soluble mineral oil used for lubricating wool for worsted combing. Also can be used in mixed fibers such as wool and acetate rayon where it produces a more even distribution of the fiber with much reduced loss in fly (broken ends). Production of noils (short ends) also is decreased. Hercules Powder Co.

COACETATEBLAK

Coacetateblak is a dispersion of carbon black in cellulose acetate designed for use wherever cellulose acetate is used in protective coatings; for example, fireproof lacquers. Composition: cellulose acetate, 40%; carbon black, 32%; plasticizer, 28%. Binney & Smith Co.

COBALT BLUE CH

A genuine ceramic color suitably modified for use by the surface coating industries. This color is extremely stable and inert toward acids, alkalies, light, heat, etc. The mass tone in oil is a very dark cobalt blue with a slightly reddish undertone. Its use is indicated for neutralizing after-yellowing in white finishes and for permanent blue tints. The Harshaw Chemical Co.

COBALT BLUE PF-30

A genuine ceramic color suitably modified for use by the surface coating industries. This color is extremely stable and inert toward acids, alkalies, light, heat, etc. The mass tone in oil is dark blue, the undertone practically a neutral blue. Its use is indicated for neutralizing after-yellowing in white finishes and for permanent blue tints. The Harshaw Chemical Co.

COBALT BLUE PF-38

A genuine ceramic color suitably modified for use by the surface coating industries. This color is extremely stable and inert toward acids, alkalies, light, heat, etc. The mass tone in oil is dark blue, the undertone slightly greenish. Its use is indicated for neutralizing after-yellowing in white finishes and for permanent blue tints. The Harshaw Chemical Co.

COBALT BLUE PFL

A genuine ceramic color suitably modified for use by the surface coating industries. This color is extremely stable and inert toward acids, alkalies, light, heat, etc. The mass tone in oil is light blue, the undertone greenish-blue. Its use is indicated for neutralizing after-yellowing in white finishes and for permanent blue tints. The Harshaw Chemical Co.

COBALT BLUE RU-51

A genuine ceramic color suitably modified for use by the surface coating industries. This color is extremely stable and inert toward acids, alkalies, light, heat, etc. The mass tone in oil is a dark blue with a decided red undertone. its use is indicated for neutralizing after-yellowing in white finishes and for permanent blue tints. The Harshaw Chemical Co.

COBALT PURPLE NO. 32

A genuine ceramic color suitably modified for use by the surface coating industries. This color is extremely stable and inert toward acids, alkalies, light, heat, etc. The mass tone in oil is brilliant dark purple with a true purple letdown. Its use is indicated for neutralizing after-yellowing in white finishes and for permanent blue tints and artists' pigments. The Harshaw Chemical Co.

COBALT VIOLET NO. 65

A genuine ceramic color suitably modified for use by the surface coating industries. This color is extremely stable and inert toward acids, alkalies, light, heat, etc. The mass tone in oil is a dark violet with a strong red undertone. Its use is indicated for neutralizing after-yellowing in white finishes and for permanent blue tints. The Harshaw Chemical Co.

COBLAC INDUSTRIAL

Coblac Industrial is a product designed for the general industrial lacquer field where a smooth glossy surface of maximum covering is wanted. Through its use there is made available for the first time a very high carbon content in combination with gloss and freedom from chalking, fading and bleeding. Composition: 1/2 second nitrocellulose, 38.5%; carbon black, 38.5%; plasticizer, 23.0%. Binney & Smith Co.

COETHLOBLAK

Coethloblak represents a new means of dispersing carbon black in ethyl cellulose. The chip thus formed is merely dissolved in various solvents which in turn may be blended with a variety of materials to make various types of protective coatings. Dissolved chip may be blended with nitrocellulose solutions, ethyl cellulose solutions, some synthetic and natural resins and oils. Composition: ethyl cellulose, 66-2/3%; carbon black, 33-1/3%. Binney & Smith Co.

COLLOIDAL BLACK DISPERSION A

Colloidal Black Dispersion A is a colloidal dispersion of carbon black ready for use without additional grinding in casein, glue, latex, shellac borax solutions and in general with all types of emulsions where water is used. Has maximum strength, excellent mass tone and tremendous covering power. Binney & Smith Co.

COLLOIDAL BLACK DISPERSION M

Colloidal Black Dispersion M is a colloidal dispersion of a "soft" carbon. It is gray when compared with A and is used where semi-dull finishes are required and is especially suitable for tinting, giving a very pleasing blue tone. Binney & Smith Co.

COLLOIDAL BLACK DISPERSION S

Colloidal Black Dispersion S is a colloidal dispersion with similar properties to those of Dispersion A but contains a higher color carbon for use where the maximum color is desired. Binney & Smith Co.

CONCENTAL*

A highly sulfonated tallow used for softening cotton, rayon, and mixed fibres in finishing of fabrics. Has unusual softening properties. Concental is very highly concentrated, carrying only 16% moisture; it does not go rancid on goods under normal drying ranges. Hercules Powder Co.

COPPER CARBONATE

A high grade copper carbonate containing over 55.5% copper. Finely pulverized, light, fluffy, and very adherent. Used as fungicide for dusting seed wheat to control smut or bunt. Tennessee Corp.

* *Registered Trade-Mark.*

COPPER CARBONATE

A dense crystalline grade of copper carbonate for use in copper plating industry. High and uniform copper content averaging about 57%. Tennessee Corp.

COPPER FUNGICIDE

A water insoluble copper fungicide containing 34% copper. High chemical purity and very finely pulverized. Made by a new process which insures high fungicidal efficiency and adherence, without injury to fruits or vegetables on which it is dusted or sprayed. Like the 26% Fungicide it is neutral and compatible with insecticides, and is intended for use where a higher copper material is desired. Tennessee Corp.

COPPER FUNGICIDE

A water insoluble copper fungicide containing 26% copper, combining very fine particle size with high chemical purity. Made by a new process of manufacture which gives a product with maximum fungicidal efficiency and adherence without injury to fruit or foliage. Neutral in reaction, compatible with insecticides, it may be used as a dust or spray for control of fungous diseases on fruits and vegetables. Tennessee Corp.

COPPER SULFATE, TRI-BASIC

The highest grade commercial basic sulfate of copper averaging 54% copper. A fine, fluffy powder, insoluble in water, and used chiefly as a spray for control of fungous diseases of citrus fruits and as a dry powder for treatment of seed wheat to control smut or bunt. New process of manufacture to insure high fungicidal efficiency with maximum safety to host plant. Tennessee Corp.

"CORDURA" RAYON YARN

A newly developed rayon which has proved itself on land and sea. Is used in manufacture of heavy-duty truck and bus tires, because of its great tensile strength and heat resisting qualities. Tests prove it gives 4 or 5 times more mileage under certain conditions. Sail fabrics are also being made from this heaviest and strongest of rayon yarns. Is inherently mildew-proof and its smoothness gives greater driving force. E. I. du Pont de Nemours & Co.

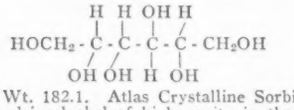
CORESINBLAK

Coresinblak is a dispersion of carbon black in an alkyd resin designed for use in protective coatings employing this type of resin and representing an improvement in jetness and gloss. Composition: resin, 32%; carbon black, 18%; solvent, 50%. Binney & Smith Co.

COSHELLACBLAK

Coshellacblak represents a dispersion of carbon black in shellac designed as a means of incorporating an improved dispersion of carbon black into products where shellac is used. Composition: shellac, 62½%; carbon black, 37½%. Binney & Smith Co.

CRYSTALLINE SORBITOL



Mol. Wt. 182.1. Atlas Crystalline Sorbitol is a hexahydric alcohol of high purity in the form of colorless crystals. Melt. pt. 85° C. to 90° C. Dissolves readily in water, and to a certain extent in methanol, ethanol, acetic acid, pyridine and phenol, but is otherwise almost insoluble in other common organic solvents. Crystalline Sorbitol is a fine chemical, adapted in purity and form for use as: A pharmaceutical (it is a diuretic), a chemical and biochemical research reagent and a synthetic starting material, as in Vitamin C synthesis. Atlas Powder Co.

D. C. COBLAC

D. C. Coblac is designed as a means for obtaining an improved dispersion of carbon black in nitrocellulose lacquers with a view to improved jetness, gloss and durability. Composition: ½ second nitrocellulose, 66.7%; carbon black, 13.3%; plasticizer, 20.0%. Binney & Smith Co.

D. H. S.* ACTIVATOR

Developed for use in household fly sprays that contain pyrethrum extract. Its major purpose is to increase killing power of sprays in which it is used. Hercules Powder Co.

DIAMYL NAPHTHALENE

$C_{10}H_6$ $(C_5H_{11})_2$. Diamyl Naphthalene distils between 326-375° C. at atmospheric pressure. Solidifies at about —30° C. Diamyl Naphthalene is stable, neutral, unsaponifiable, non-toxic, and its solvent strength or compatibility make it a desirable plasticizer for rubber resins, as well as a number of other synthetic resins and asphaltic materials. The Sharples Solvents Corp.

DIBUTYL OXALATE

$(COOC_4H_9)_2$. A water-white liquid with a mild aromatic odor; boiling pt. of 243.4° C. and a sp. gr. of 0.989-0.993 at 20°/20°. It is immiscible with water but miscible with most organic solvents. Dibutyl Oxalate is a solvent for nitrocellulose and it also offers interesting possibilities for organic synthesis. U. S. Industrial Chemical Co., Inc.

n-DIBUTYLAMINE

$(C_4H_9)_2NH$. Primary Normal Dibutylamine is a clear, water-white liquid, boiling at 161° C. Sp. gr. is 0.765 at 20° C. Is only partly sol. water, but miscible with most organic solvents. Dibutylamine reacts to form various derivatives which serve as rubber vulcanization accelerators, flotation reagents, dyestuffs and corrosion inhibitors. The Sharples Solvents Corp.

DICALCIUM PHOSPHATE

Produced from pure phosphoric acid, resulting in a product with a minimum of impurities. A tasteless, crystalline, white material meeting U.S.P. and Pure Food Law requirements. Uses: Medicine; as a mineral supplement to the diet deficient in calcium and phosphorus. Dentifrice: as a tooth paste polishing agent. The American Agricultural Chemical Co.

DIETHYL BENZENE (TECH.)

$C_6H_4(C_2H_5)_2$. Boiling pt. range, 179.8-184.8 °C. at 760 mm.; sp. gr., 0.865 at 25/25 °C.; dielectric constant, 2.22; flash pt., 56 °C.; fire pt., 63° C. Proposed uses: solvent, low boiling heat transfer medium, and intermediate. Dow Chemical Co.

DIETHYL MALEATE

$(CHCOOC_2H_5)_2$. A water-white liquid with a very mild pleasant odor; boils at 225 °C. and has a sp. gr. of 1.0658 at 25°/25°; is a solvent for nitrocellulose and in conjunction with 10-30% alcohol is a solvent for cellulose acetate. U. S. Industrial Chemical Co., Inc.

DIETHYLENE GLYCOL STEARATE

A white wax-like solid with a melting point of 55° C. Contains no free alkali or amines. Disperses completely on stirring in hot water. Soluble in hot solvents, oils, and alcohols. Suggested as a base for cosmetics and as a general emulsifying agent for viscous emulsions. The Beacon Co.

DIGLYCOL LAURATE

An ester similar to Propylene Laurate and can, in most cases, be used interchangeably with it. However, it is not suggested for use in food products. The Beacon Co.

DIGLYCOL PHTHALATE

A water-white viscous liquid. Sp. gr., 1.21 at 24° C. Miscible in all proportions with the lower molecular weights, monohydric and polyhydric alcohols, acetone and chloroform. Insoluble in hydrocarbons and oils. Films are of non-drying nature that polymerize on heating. The Beacon Co.

DIMETHYL MALEATE

$(CHCOOCH_3)_2$. A water-white liquid which boils at 205° C. and has a sp. gr. of 1.1506 at 20° C.; is a solvent for nitrocellulose and for cellulose acetate. U. S. Industrial Chemical Co., Inc.

DINITRO ORTHO CYCLO HEXYL PHENOL

Incorporated in oil to the extent of about 4% and combined with a dry emulsifier in the presence of water to make a dormant spray for apple, cherry, and pear trees, this combination gives splendid scale control, and acts as an ovicide to control Rosy Aphis, Black Cherry Aphis, Red Mite, Bud Moth, and a few insects of lesser importance. Dow Chemical Co.

"DIOLIN" OCTADECANEDIOL "DIOLIN" A OCTADECANEDIOL-DIACETATE

"Diolin"—a white, amorphous, waxy-appearing solid. It is used in the preparation of plasticizing compounds; in cosmetics, creams, water and grease-proofing agents; in polishes and as a wax substitute. "Diolin" A—a clear, odorless liquid, faintly yellow in color. It is used as a plasticizing agent for synthetic resins, nitrocellulose and artificial leather composition; as a lubricant for molds for colorless and transparent resins. E. I. du Pont de Nemours & Co.

DIPENTENE

SOUTHLAND PT No. 160. An improved dipentene with a more pleasant "piny" odor, will dissolve or disperse natural and many synthetic resins. Improves wetting, adhesion and leveling. Uniform rate of evaporation reduces setting up stress. The Retort Chemical Co.

DOWAX

Emulsified wax containing bentonite and other materials, forming a semi-permeable film through which vapors and gases necessary for transpiration may pass. Principal Uses: 1. Coating of trees and shrubs and plants before storing or transplanting. 2. Prevention of summer sunscale on newly planted trees. 3. Spraying of evergreen to prevent winter windburn and browning of foliage. 4. Coating of Christmas trees to prevent needle fall. Dow Chemical Co.

DRIED WHEY

For the first time this process makes commercially available dried whey, major percentage of the lactose of which is in stable beta anhydride form. Previously whey drying processes produced materials, the lactose of which is in alpha hydrate form, in which 5% of water is bound to the lactose. In beta anhydride form lactose is readily soluble, slightly sweeter in taste, and easily digestible. Additionally, by the drum-drying process higher percentages of lactic acid can be incorporated in the dry product than was previously customary. Hercules Powder Co.

DRY PLASTICIZED SIZE

This new paper size is in dry powdered form, capable of being shipped in bags. It is composed of a completely saponified rosin soap, the rosin of which has been plasticized with agents to reduce its melting point, and raise its effective waterproofing. It is a substitute, in combined form, for mixtures of rosin size and emulsions of materials such as waxes, oils, and plastic resins, previously used in paper trade. Hercules Powder Co.

ELEMENTAL PHOSPHORUS (Yellow)

Produced from selected grades of pebble phosphate rock from A.A.C. deposits, utilizing the electric furnace method developed by A.A.C. engineers. Solid, non-metallic element. Exceedingly poisonous. Available in solid form or cakes weighing approximately 1 to 3 lbs. each. Shipping containers: metal drums holding approximately 250 to 350 lbs. net. Uses: For the manufacture of intermediates and phosphorus compounds; rodent poisons; flares, smoke screens, etc.; for alloying copper, bronze, etc.; and reagent in the preparation of medicinal compounds. The American Agricultural Chemical Co.

EL-SIXTY

An accelerator developed particularly for rubber stocks highly compounded with clay. This characteristic of the product has made it a valuable accelerator for all types of mechanical goods, including heels, soles, and molded articles. Rubber stocks containing EL-Sixty process well in the factory without pre-vulcanization or scorching difficulties. Rubber Service Laboratories, Division of Monsanto Chemical Co.

ERYTHROIDINE

In connection with a study of the botanical and chemical components of curare, a chemical examination of the seeds of *Erythrina americana* was made, which resulted in the isolation of a pure crystalline alkaloid with curare action for which the name erythroidine has been retained. Erythroidine, $C_{16}H_{19}NO_3$ in the form of its hydrochloride, m.p. 228-229° with decomposition, causes complete motor paralysis when 0.10-0.15 mg. is injected into the lymph sac of the frog. Erythroidine gives the typical curare action, a selective paralyzing action on motor nerve endings of striated muscle, and in contrast to curare, is effective on peroral administration. Clinical trials are being made in the treatment of Parkinson's disease and in spastic paraplegia. Merck & Co.

"ESTEROL H-1"

Pure alkyd plastic, free of phenol or natural resins. Is a high viscosity alkyd solution, developed principally as a vehicle for high-temperature baking white enamels—possessing excellent color-retention, good lustre and adhesion to metal, with good flexibility. Stroock & Wittenberg Corp.

"ESTEROL 1-L"

Medium oil-length alkyd plastic, further modified with an organic acid condensate and drying oils. Has been developed primarily for very quick-drying white enamels, with good waterproofness and excellent lustre. It has a high viscosity and will permit of considerable reduction with thinners, without appreciable loss of lustre, and therefore is a most economical vehicle for quick air-drying and low temperature baking white enamels. Stroock & Wittenberg Corp.

"ESTEROL 559"

Pure alkyd plastic, free of phenol or resins. Is in the same group—as to length of oil—as Esterols B, D and PV. It has been developed especially for architectural finishes where a preponderance of basic pigments such as zinc oxide is desired. It dries somewhat slower than the other 3 Esterols mentioned in the same group, but this can be improved by allowing an adequate amount of zinc oxide in the pigmentation, without any danger of livering. Esterol 559 possesses excellent color-retention, particularly for interior work in the absence of light. It is recommended for gloss mill whites. Stroock & Wittenberg Corp.

"ESTEROL 562"

Medium oil-length alkyd plastic, further modified with a high condensation phenol-formaldehyde resin. Is not as pale or as flexible as Esterol A, but imparts to finishes better gloss, faster drying and through hardness—with better water-proofness. Stroock & Wittenberg Corp.

"ESTEROL 575"

Pure alkyd plastic, free of phenol or natural resins. Is relatively short in oil, and has been developed for quick air-drying and low temperature white baking enamels, with good color-retention. Is a rapid-drying vehicle, and we therefore recommend that finishes formulated with this resin be applied by spraying. Stroock & Wittenberg Corp.

"ESTEROL 640-N"

Short-oil alkyd plastic, further modified with a special phenolic resin. Is distinguished by extremely rapid setting. It is the fastest drying of all unmodified and modified Esterols. Stroock & Wittenberg Corp.

"ESTEROL 747"

Medium oil-length alkyd plastic, further modified with a high condensation phenol-formaldehyde resin and drying oils. Will not dry as rapidly as Esterol 562, but has better flexibility, and greater tolerance for mineral spirits. Therefore, Esterol 747 permits of easier manipulation; finishes formulated with this resin will have good brushing properties, in addition to quick drying, waterproofness, durability, lustre and lustre-retention. Stroock & Wittenberg Corp.

"ESTEROL 809"

Pure alkyd plastic, free of phenol or natural resins. Was developed for white architectural finishes—interior and exterior—where color-retention is of prime importance. Esterol 809—like Esterol H-1—is resistant to discoloration when baked at high temperatures; it is more flexible, and has greater tolerance for mineral spirits. Is recommended for quick drying white finishes, with good brushability, lustre, adhesion and excellent durability. Stroock & Wittenberg Corp.

"ESTEROL 830"

Pure alkyd plastic, free of phenol or natural resins. Is relatively short in oil, and has been developed primarily for use in nitrocellulose lacquers. Stroock & Wittenberg Corp.

ESTEROL 1800

Pure alkyd plastic free of phenol or resins. Was developed essentially for architectural finishes to provide for easy brushing, non-sag and color-retention of a finished architectural interior or exterior enamel. Stroock & Wittenberg Corp.

ETHOCEL

A colorless, odorless, tasteless, and non-toxic plastic easily molded. Sp. gr. 1.14; effect of strong alkalies, none; effect of weak acid, none; soluble in wide range of solvents; stable to heat at ordinary molding or baking temperatures; retains flexibility at low as well as high temperatures; allows free passage of all light rays including near ultra-violet. Proposed Uses: 1. Flexible lacquers for wood, metal, paper, textiles, and rubber; 2. Varnishes of decreased drying time and increased flexibility; 3. Flexible cable coatings of high insulation and low flammability. Lacquer emulsions for fabrics and paper coatings; 4. Printing inks of improved drying time and freedom from offset; 5. Pigments dispersion for lacquers, enamels, and printing inks; 6. Plastics for injection and compression molding; 7. Wax and resin compositions of increased toughness and melting point; 8. Artificial silk and staple fibers; 9. Transparent wrapping foil; 10. Hot melt coatings for application without solvent. Dow Chemical Co.

ETHYL BENZENE

$C_6H_5(C_2H_5)$. Boiling pt. range, 134.8-138.0°C. at 760 mm.; sp. gr., 0.866 at 25/25°C.; dielectric constant, 2.34; flash pt., 20°C.; fire pt., 21°C. Proposed uses: organic synthesis, solvent, for plastics and resins. Dow Chemical Co.

ETHYL FORMATE

($HCOOC_2H_5$). A water-white liquid which boils at 54.3° C., and has a sp. gr. of 0.900-0.930; has a pleasant aromatic odor which is non-residual. Widest use is as a fumigant and larvicide for dried fruits, cereals, tobacco, etc.; also used in medical preparations. U. S. Industrial Chemical Co., Inc.

ETHYL METAPHOSPHATE

($C_2H_5OPO_2$) M. W. 108. Colorless, odorless, thick liquid. Hygroscopic. Soluble in water with decomposition. Soluble in chloroform. Uses: phosphorylating agent. Victor Chemical Works.

"FALBA"

A highly concentrated oxycholesterin product, derived from Lanoline; practically odorless and greaseless. Absorbs five times its own weight of water. Absorbed by the skin, benefiting the skin secretions and increasing blood cholesterols by simple inunction. Miscible with acids and alkalies without change. Uses: as an Emollient, soothing to the mucous membranes. Recommended for skin creams and ointments. Pfaltz & Bauer, Inc.

FERRISUL

An anhydrous ferric sulfate, free flowing, non-caking and readily soluble in water. It is used as a coagulant for municipal and industrial water supplies, for municipal sewage and industrial waste, and for boiler feed-water. It is also a descaling agent for copper and copper alloys, stainless steel, and an etching agent for ordinary steel prior to galvanizing. Merrimac Chemical Co., Division of Monsanto Chemical Co.

FOAMEX

An anti-foaming agent for water solutions of glue, gelatin, casein, shellac, latex, etc. Addition of as little as 1 oz. of Foamex to 10 gals. of solution is generally sufficient to reduce foam. Suggested for the manufacture of paper coatings, latex compositions, leather finishes, adhesives, textile sizes and finishes. Glyco Products Co., Inc.

GLYCERO

A new glycerin substitute of good color and body. Is entirely non-toxic and edible. Finds use in textile softening, warp sizing, glue manufacture, paper softening, flavoring tobacco, cosmetic manufacture, increasing viscosity of miscible liquids, depressing freezing points, and as a fluid pressure medium for hydraulic devices. The Beacon Co.

GLYCOCOLL

(AMINO ACETIC ACID) (GLYCINE) $CH_2(NH_2).COOH$. M. W. 75.05. M. P. 233° C. White Crystal Material. Appearance like granulated sugar, and reported to have about 70% of the sweetness of sugar. Odorless. No chlorides, sulfates, or heavy metals. Sol. water; slightly sol. alcohol; insol. ether. Uses: mfr. varnishes, in medicines, tonics, buffers, synthetics, resins. Grades: Tech., Med., Pure. Amecco Chemicals, Inc.

*GLYCOLA K-5

A glycerin substitute having many commercial uses. Color, slightly yellow; clarity, crystal clear; odor, none. Sp. Gr. 1.313 @ 20° C.; cold test —25° F.; pH 6.5 to 7; moisture 15%; hygroscopicity—absorbs 26½% moisture in 11 days. Viscosity, same as glycerin; free from—oils, fats, lactates. Solubility—makes clear solutions with water. Haas-Miller Corp.

*GLYCOLA K-90

A trihydric alcohol ammonia compound. Replaces glycerin in making gaskets, paper coating, printers' rollers, sizing, printing, pastes and as a plasticizer for glues, gelatin, etc. pH 7; cold test —35° F.—Absorbs 51% moisture relative humidity 100% @ 70° F. Moisture content 5%. Contains no sugars, aldehydes or lactates. Haas-Miller Corp.

*GLYCOLA REGULAR

Replaces glycerin in preparation of textile printing pastes, real silk hosiery throwing, sizing of cotton and rayon, textile softening and as a plasticizer for starch, glue, gelatin, etc. Is neutral in reaction, makes clear solution with water. Is odorless. Viscosity similar to glycerin. Contains no sugars, aldehydes or lactates. Haas-Miller Corp.

GLYCOPON 2K

Glycerin substitute for the manufacture of imitation vanilla. Glycopon 2K is colorless and odorless. It dissolves 5 times as much coumarin as glycerin does and 50% more vanillin than glycerin does. Glycopon 2K is less toxic than alcohol and glycerin, and is completely soluble in alcohol. Not only is Glycopon 2K cheaper than glycerin, but a smaller amount is required. Glyco Products Co., Inc.

GLYCORIDE

(Glycol Glyceryl Stearate) White, wax-like solid with a melting pt. of 54° C.-59° C. Emulsifying agent free from soaps, alkalies, amines and inorganic salts. Disperses readily on stirring in hot water (above 65° C.). Forms stable emulsions in water without use of alkalies or additional emulsifying agents. A 1% dispersion of Glycoride in water has a pH of 5.9 at 25° C. Emulsions made with it have a pH of about 6.4. Suggested for paste emulsions for cosmetics, polishes, textiles, etc. Glyco Products Co., Inc.

GLYCOSINE

(Para Phenetol Carbamide) A white finely crystalline powd.; M. P. 171/172° C. Soluble in cold water 1 to 800, in hot water 1 to 50, and in alcohol 1 to 25. Used as a sweetener in food for diabetics, and in pharmaceutical preparations. Possesses pleasant natural sugar-like taste. R. W. Greeff & Co., Inc.

GREEN 120

A mixture of Brilliant Yellow 101 and Blue 123 in a proportion to obtain in solution an emerald green color. Only recently adopted for use in permanent wave solutions. Interstate Color Co.

GUANIDINE NITRATE

An interesting new commercial product in that it is the potential raw material in the manufacture of nitroguanidine, an important ingredient in certain explosives. Aminoguanidine and a number of other interesting compounds can be prepared with guanidine nitrate as the starting material. Dissolves to the extent of 26 parts in 100 parts of water and is somewhat soluble in alcohol. American Cyanamid & Chemical Corp.

* *Registered Trade-Mark.*

GUM ARABIC #816, CRYSTAL

Uniform particles and the cleanliness of this particular grade make it an excellent substitute for U.S.P. Powdered Acacia (Arabic). Innis, Speiden & Co.

GUM KARAYA G-5—CRYSTAL

A whiter grade of crystal Karaya which is much better suited for the preparation of proprietary compounds than grades previously in use. The uniform particle size facilitates coating process. Innis, Speiden & Co.

GUM TRAGACANTH #30—CRYSTAL

A cleaned, blown and sifted type of Flake Persina Tragacanth that has helped to eliminate the cleaning and straining process which has previously caused trouble to the users of low-grade Flake Tragacanth. Innis, Speiden & Co.

"HC" SOLVENT

"HC" solvent (formerly known as "Ketanol") is a softening agent for "Pyralin" cellulose nitrate sheet and similar nitrocellulose sheet. It was developed specifically for this purpose and is employed in applying nitrocellulose sheet as covers on wood heels for women's shoes, sanitary wear and the like. "HC" solvent is compounded to controlled specifications assuring uniform operation and results. Sheets softened in "HC" solvent solution have excellent body, show no tendency to stick together or curl, and take and retain a sharp, clear embossing effect. E. I. du Pont de Nemours & Co.

HEMI-SODIUM PHOSPHATE

($NAH_5P_2O_8$) This is a compound of one sodium atom with two molecules of orthophosphoric acid. It is a hard, granular, highly acid hygroscopic salt. It has a melting point of about 120° C. It is used in the contact tinning of brass and in the preparation of silage. Victor Chemical Works.

HERCOSE AP*

This new cellulose derivative combines the advantages of nitrocellulose (ready solubility in cheap solvents and miscibility with a wide variety of plasticizers) with the light-fastness of cellulose acetate. Utility of protective coatings made from a cellulose ester with these properties is well-known. Hercules Powder Co.

"HEXALIN" CYCLOHEXANOL SOLVENT

A water-white liquid with strong camphoraceous, menthol-like odor. It is neutral and non-phenolic and will not dissolve cellulose nitrate or cellulose acetate. An unusual property of "Hexalin" is that its solubility in water decreases with increasing temperature. It is used as a solvent homogenizer and stabilizer in the paint and varnish, dry cleaning, and textile industries. E. I. du Pont de Nemours & Co.

HIGH-TEST ALKALI

New product for bottle washing machines of the soaker type in breweries, dairies and soft drink establishments. Prepared in dustless flake form. Properties of constituents: (a) caustic soda for germicidal and saponifying abilities; (b) soda ash for buffering action; (c) trisodium phosphate for emulsifying power; (d) sodium metasilicate for dispersive action. Diamond Alkali Co.

HORMODIN A

Hormodin A is the new root-forming chemical that stimulates rapid root growth on leafy cuttings, being especially valuable for propagating plants by cuttings, whether normally rooted with ease or with difficulty. Hormodin hastens the rooting of cuttings to much less than normal time, assuring quicker and better rooting in higher percentages than otherwise possible. The Hormodin treatment consists merely in placing the basal ends of the cuttings in a prescribed water solution for a specified period of time, usually 24 hours. Hormodin was developed by the Boyce Thompson Institute for Plant Research, Inc., and is manufactured by Merck & Co., Inc., under an exclusive license from the Boyce Thompson Research Foundation, Inc.

HYDROXYLAMINE HYDROCHLORIDE SOLUTION

. NH_2OHHCL. Light colored solution containing 2 lbs. Hydroxylamine Hydrochloride per gal., dry basis. Contains small amount ammonium chloride. Uses: Mfr. intermediates, organic chemicals, synthesis, mfr. oximes, in medicine. Amecco Chemicals, Inc.

INDUSOIL

A pine fatty acid containing a mixture of rosin acids and certain non-acids, such as sterols, higher alcohols, etc. Principally used in manufacture of textile and dry cleaning soaps, replacing Red Oil. Industrial Chemical Sales Division, West Virginia Pulp & Paper Co.

ISOBUTYL-PARA-AMINO-BENZOATE

(C_6H_4-(NH_2)$COO.CH_2.CH(CH_3).CH_3$). White crystalline scales, almost insoluble in water, easily soluble in most organic solvents. M.P. 65° C., B.P. 161-164° C. at 2 mm. vacuum. A saturated aqueous solution containing 0.02% of the pure crystals will produce complete anaesthesia of the cornea of the eye and a solution of 1/3 this strength has a distinct anaesthetic influence. Recommended for use in dusting powder in painful ulcers, especially after burns. Ointment containing it is useful in relieving the itching of chronic eczema and other skin diseases as well as the pain of anal fissure and hemorrhoids. Kessler Chemical Corp. subsidiary of American Commercial Alcohol Corp.

ISOPROPYL BENZENE

$C_6H_5(C_3H_7)$. Boiling pt. range, 151.0-153.9 at 760 mm.; sp. gr. 0.860 at 25/25° C.; dielectric constant, 2.26; flash pt., 32° C.; fire pt., 45° C. Proposed uses: solvent and intermediate. Dow Chemical Co.

KILFROST BUNKER COIL SOLUTION

For application by spraying when space between coils is not wide enough to permit paste application. International Selling Corp.

KILFROST DEFROSTING SOLUTION

Used as an aid in removing ice from coils prior to paste application. International Selling Corp.

KILFROST PASTE

For application to coils in refrigerated rooms where temperature maintained is always 30° F. and below. International Selling Corp.

KILFROST SPRAYING SOLUTION

Solution used in connection with paste applications. International Selling Corp.

KOSMOS

KOSMOS brand of carbon black is a heavily compressed product which is supplied in 12½ and 25 lb. bags. This type of carbon black is used in manufacture of automobile tires, cable cover stocks, soles and heels and mechanical rubber goods in general; exhibits excellent physical characteristics from standpoint of rubber compounding. United Carbon Co.

KOSMOS F-4

KOSMOS F-4 is a high grade color black and is used as a coloring agent in lacquer, enamel and paint industries. Exhibits a high color value and tinctorial power in combination with a relatively low oil absorption factor; used to a great extent in the automobile industry for coloration of protective coatings. United Carbon Co.

KOSMOS R

KOSMOS R is a color grade of carbon black produced especially for the printing ink industry. This product has an excellent color value and tinctorial power and possesses a very soft texture; is used extensively as a coloring agent for typographic inks, such as news inks, book and magazine inks, etc. United Carbon Co.

KOSMOBILE 66

KOSMOBILE 66 is a new type of dustless carbon black exhibiting exceptional characteristics in reinforcement of rubber. Is used in manufacture of automobile tires, mechanical rubber goods, rubber soles and heels and other sundry articles. Is clean to handle, fine flowing, pours readily from bag. United Carbon Co.

KWK VOLCLAY

A form of high colloidal swelling bentonite, which can be poured into water and will swell fully in a fraction of the time required for powdered bentonite and with a fraction of the usual mechanical stirring. It will not form clots or curds which are difficult to disperse. American Colloid Co.

LANOSYN

(Substitute for Lanolin for technical purposes.) A light colored paste with a pleasant odor. Lanosyn absorbs varying amounts of water, forming smooth, stable, light colored emulsions of the water-in-oil type. Compatible in certain proportions with oils. Gives very sticky, non-inflammable products when small amounts of latex are incorporated. Has high penetrating and softening properties. Glyco Products Co., Inc.

LIQRO

A semi-refined product of the Tall Oil type and finds application as an emulsification agent in the manufacture of synthetic pitch, asphalt emulsions, etc. Industrial Chemical Sales Division, West Virginia Pulp & Paper Co.

LITHIUM CHLORIDE BRINE

A new, purified alkali brine, containing 40 to 42% lithium chloride with a pH of 7 to 7.5. Because of the remarkable hydroscopic properties of this brine, its use in air conditioning and dehumidification is growing rapidly. Its properties suggest its use as a satisfactory glycerin substitute in certain fields. Laboratory tests show that it is bacteriostatic. Foote Mineral Co.

"LUCITE"

A methyl methacrylate polymerized derivative of methacrylic acid. Sold as a cast resin in the form of sheets, rods, and tubes, and as a thermoplastic molding powder. In both forms it is available as a crystal clear product and in a wide variety of brilliant transparent, translucent and opaque colors. One of the properties of this new plastic is its ability to convey light through itself edgewise, concentrating the illumination at the ends or edges only. Applications of "Lucite" are unlimited due to its unusually attractive properties. E. I. du Pont de Nemours & Co.

MAGNESIUM OXIDES

A low silica, low iron periclase exceptionally high in MgO content, a refractory suitable for electric or other furnaces operating at extremely high temperatures, particularly those handling non-ferrous metals and alloys. This crystalline magnesium oxide has a typical analysis as follows: Ignition loss, .10%; SiO_2, .80%; Fe_2O_3, .20%; Al_2O_3, .40%; CaO, 1.60%; MgO, 96.90%. California Chem Co. Division, Westvaco Chlorine Products Corp.

MAGNESIUM OXIDES

Produced from seawater. Novelty of these products resides in the fact that they represent the first production of what may be termed "tonnage quantities" of commercial magnesium oxide from other than the calcination of natural magnesite ores. All these products originate from California seawater bittern. Tests over a 3-year period have shown that they are equal or superior to "calcined" or "dead burned" mined magnesites from domestic or foreign sources. Impurities residing in mined magnesite ore cannot be removed but the composition of seawater products can be altered to meet particular needs of the chemical and refractory industries; furthermore constant uniformity can be assured. Light calcined magnesium oxide grade has the following typical analysis: ignition loss, 2.00% to 5.00%; SiO_2, .80%; Fe_2O_3, .20%; Al_2O_3, .40%; CaO, 1.60%; MgO, 92-95%. Chemically this product is comparable to high grade mined magnesite of the "caustic calcined" variety, suitable for use in the manufacture of epsom salts, paper, glue, hard rubber goods, etc. California Chem. Co. Division, Westvaco Chlorine Products Corp.

MAGNESIUM OXIDES

Refractory Periclase is another grade of magnesium oxides from seawater bittern and a typical analysis is: Ignition loss, .10%; SiO_2, 5.00%; Fe_2O_3, .20%; Al_2O_3, .40%; CaO, 2.00%; MgO, 92.30%. A low iron periclase burned at elevated temperature to a crystalline structure for grain and refractory brick to be used in basic open hearth and electric furnaces. California Chem. Co. Division, Westvaco Chlorine Products Corp.

MAGNESIUM OXIDES

Dead Burned Magnesite produced from seawater bittern—a high iron product for manufacturing brick; also employed in grain form for hot repairs in open hearth furnaces. Typical analysis is: Ignition loss, .10%; SiO_2, 6.00%; Fe_2O_3, 7.00%; Al_2O_3, 2.00%; CaO, 4.00%; MgO, 80.90%. California Chem. Co. Division, Westvaco Chlorine Products Corp.

MAGNETIC CATALYTIC SULFUR

A safener for lime-sulfur and lead arsenate spray combinations which reduces arsenical injury and black sludge formation, speeds up the normal lime sulfur set, acts as spreader and sticker, replaces hydrated lime, increases sulfur residue. Stauffer Chemical Co.

MAGNETIC CRYOLITE SULFUR
(dust or spray)

The cryolite used in Magnetic Cryolite-Sulfur dust and spray is an improved form of synthetic cryolite (sodium fluo-aluminate). It is a very light, fluffy material of exceedingly fine particle size, possessing properties superior to natural and other synthetic cryolites. Like other concentrated insecticides, cryolite should be diluted before being used in a spray or dust. Our entomologists argued—"Why use an inert material as the carrying agent?" Result—the combining of cryolite with sulfur, the most widely used fungicide in agriculture. Stauffer Chemical Co.

MAGNETIC GARDEN DUST OR SPRAY

An all-purpose combination that will successfully combat most every pest and fungous growth encountered in the cultivation of garden crops, flowers, shrubs, and evergreens. It is triple action because it contains rotenone, nicotine and sulfur, compounded in the proper proportions to control chewing insects, sucking insects and fungi. Stauffer Chemical Co.

MAPICO CRIMSON No. 98

A new development in the red iron oxide field, used widely where a good permanent maroon is required, also in reduced form its use is desirable as a base for organic colors in orchid tints, to add something to the permanency of the finish. Binney & Smith Co.

MAPICO RED No. 734

Also a new development in the red oxide field. Its use is desirable where a bright yellowish red is required. Binney & Smith Co.

MAPICO YELLOW LEMON HVY

A new product which, although possessing in a general way same chemical characteristics as regular Mapico Yellows, has considerably lower oil absorption, and as a consequence is more rapidly ground into certain vehicles. Binney & Smith Co.

MERTANOL

A syntan of particular interest in chrome tannage or bleaching to make white, for free tannage, and for neutralization in vegetable tan leathers for aiding the penetration of the tan with resulting lighter colors. Merrimac Chemical Co., Division of Monsanto Chemical Co.

META-PHENYLENEDIISOTHIOCYANATE

White, odorless and tasteless crystals, M. P. 63° C., B. P. 157° C. at 6 mm. vacuum. Almost insoluble in water, easily soluble in most organic solvents. This product is even more effective as a synthetic insecticide than the Alpha Naphthylisothiocyanate. Kessler Chemical Corp., subsidiary of American Commercial Alcohol Corp.

METASAP 569

A waterproofing solution for fibrous materials containing approximately 30% of metallic soaps in a volatile thinner. One part of Metasap 569 with 5 parts of mineral thinner gives ample waterproofing effect. Film left on the material after treatment is colorless, clear, grease proof and waterproof. Metasap 569 is recommended for treatment of paper, textiles, fiberboard, etc. Metasap Chemical Co.

METHYL FORMATE

Du Pont is the first company to manufacture this odorless volatile liquid on a large commercial scale. Methyl formate has a pleasing odor, is used as a fumigant and in the preparation of formates. It also serves as an intermediate in the manufacture of resins, perfumes and dyes. E. I. du Pont de Nemours & Co.

METOL

Methyl paramidophenol sulfate. Well-known photographic developer. Specially pure product prepared from one of the company's own intermediates. Zinsser & Co.

"MIKE" SULFUR

95% active sulfur combined with a small quantity of wetting agent. Particle size is from 2 to 3 microns, which in screen measurements would be about 5000 mesh. Used as a fungicide either alone or in combination with lime sulfur. Efficient control of apple scab, brown rot on peaches and plums, and on roses and other garden plants. Dow Chemical Co.

MIXED AMYL NAPHTHALENES

Mixture of $C_{10}H_7.C_5H_{11}$ $C_{10}H_6(C_5H_{11})_2$. Mixed Amyl Naphthalenes have a boiling range of 290-365° C. and a flash pt. of 290° F. Dielectric strength is 42.1 kv. in a G. E. Test Cup. Regular technical grade can be further purified to produce an almost water-white and almost odorless liquid. The Sharples Solvents Corp.

MOLIKROME ORANGE

Brilliant Orange with scarlet tone, pure bluish undertone, approximately 6 times the strength of corresponding basic lead chromate oranges. Very opaque, good light fastness, fairly alkali resistant. Non-bleeding in oil, hot wax, water, etc. An excellent color for baking enamels and general protective coverings, lithographic inks and other type printing inks. The Harshaw Chemical Co.

MONOAMYL NAPHTHALENE

$C_{10}H_7.C_5H_{11}$. Monoamyl Naphthalene has an Engler distillation range of 279-320° C. at atmospheric pressure. It solidifies at about —60° C. and the flash pt. is 277° F. Being an alkylated aromatic hydrocarbon it is quite stable and under ordinary conditions is not affected by water or dilute acids or alkalis. The Sharples Solvents Corp.

n-MONOBUTYLAMINE

$C_4H_9NH_2$. Primary Normal Monobutylamine is a raw material for the manufacture of pharmaceuticals, dyestuffs, rubber chemicals, emulsifying agents, de-sizing agents for textiles, butylated acid amides and other analogous organic compounds. Monobutylamine can be condensed with aldehydes, ketones and oxides. Also reacts with phosgene, chlorhydrins, and cyanic or thiocyanic acid derivatives. The Sharples Solvents Corp.

MONACALCIUM PHOSPHATE

(CRYSTAL PHOSPHATE). Manufactured from pure phosphoric acid. Is pure, true crystals of monocalcium phosphate, free flowing and non-caking. Meets all U. S. Pure Food Law requirements. Guaranteed 99½% pure. Principal uses: Leavening agent in baking powder and self-raising flour; also for phosphating plain flour. The American Agricultural Chemical Co.

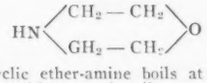
"MONASTRAL" FAST BLUE B.S.

An insoluble pigment producing extremely brilliant shades of blue never before obtained. Is manufactured in both a highly dispersed powder and paste form. Is resistant to most of the severe color-destroying agencies and because of its excellent properties and high tinctorial strength, this product is recommended for use in such color-consuming industries as printing inks, paints, papers, wallpapers, linoleums, cements and leathercloth. E. I. du Pont de Nemours & Co.

MONOMERIC METHYL METHACRYLATE

Monomeric Methyl Methacrylate is a volatile liquid of low viscosity which can be polymerized or solidified to the solid polymeric methacrylate by the application of heat, light and oxygen. E. I. du Pont de Nemours & Co.

MORPHOLINE



This cyclic ether-amine boils at 128° C. and is miscible with water in all proportions. Morpholine is a mild base and, with fatty acids, readily forms soaps which are excellent emulsifying agents for use in polishes, paper, coatings, paints and lacquers. Moderate volatility of Morpholine causes it to evaporate gradually from the drying emulsion film, making the latter resistant to subsequent water treatments. Being an ether, an amine and having a ring structure, Morpholine is a powerful solvent for a host of materials including resins, dyes, waxes and other industrially important substances. It also lends itself to synthetic reactions characteristic of cyclic secondary amines. Carbide and Carbon Chemicals Corp.

NACCONOL EP

A light tan flaky solid; an alkyl aryl sodium sulfonate. Principal use: Antipitting agent in nickel plating by any dull nickel process. Resulting plates buff much more easily and are more resistant to salt spray test. Practical application directions available. National Aniline & Chemical Co.

NACCONOL LA

A soluble, white, flaky, synthetic compound with soaplike properties. A true sulfonate—not a sulfate. Principal uses: In cosmetics and as foaming and cleansing agent for dentifrices. Provides soapless frothing, unaffected by hard water or even sea water. National Aniline & Chemical Co.

NACCONOL NR

A white flaky solid; an alkyl aryl sodium sulfonate. Because of its chemical nature it possesses outstanding stability to acids and alkalies, chemical oxidation and reduction. All its salts, even those of the heavy metals, have adequate solubility for practical use, hence it functions effectively in hard water as well as many of the chemical solutions used in industrial processing. Principal uses: In the textile industry for cleaning by emulsification, wetting-out and level dyeing. In the leather industry for wetting-back skins and as a leveling agent in dyeing. In the paper industry for wetting paper makers felts and for maintaining them in usable condition. National Aniline & Chemical Co.

NACCOTAN A

A light tan solid synthetic re-tanning agent for producing exceptional whites on all leathers, with increased plumpness of the skin. Also of unusual merit as a level dyeing agent in the application of acid and direct colors. National Aniline & Chemical Co.

NAPHTHALENE NUGGETS

Melt. pt. 79.6° C. minimum. A new and more convenient form of Naphthalene—the most widely used moth preventive. Transparent crystals of uniform size. Easy to handle—no brushing required to remove from garments when unpacking after storage. Sold in bulk in barrels and in 12 oz. and 16 oz. cartons. The Barrett Co.

NAPHTHENIC SOAP *E* GRADE

Mineral oil (%), 34-38; naphthenic acid (%), 45-50; reaction, alkali; NaOH, 0.7%. Naphthenic Soap is a by-product from distillation of White Mineral Oils. Owing to excellent emulsifying properties, it is used as emulsifyer and bodying agent in the manufacture of cutting oils, industrial soaps, textile oil specialties, etc. S. Schwabacher & Co., Inc.

NAPHTHENIC SOAP *INO* GRADE

Mineral oil (%), 1.3; naphthenic acid (%), 77.9; reaction, alkaline; free alkali as NaOH (%), 0.06. This soap is completely soluble in hot water, and forms a slightly opaque solution. Naphthenic Soap is a by-product from distillation of White Mineral Oils. Owing to excellent emulsifying properties, it is used as emulsifyer and bodying agent in the manufacture of cutting oils, industrial soap, textile oil specialties, etc. S. Schwabacher & Co., Inc.

NAPHTHENIC SOAP *SOE* GRADE

Mineral oil (%), 1.5; naphthenic acid (%), 81.9; reaction, alkaline; free alkali as NaOH (%), 0.17. This soap is completely soluble in hot water, and forms a transparent solution. Naphthenic Soap is a by-product from distillation of White Mineral Oils. Owing to excellent emulsifying properties, it is used as emulsifyer and bodying agent in the manufacture of cutting oils, industrial soaps, textile oil specialties, etc. S. Schwabacher & Co., Inc.

NATIONAL BRILLIANT INDIGO 4BR PRINTING FLAKES

National Carbanthrene Printing Flakes are identical with the Carbanthrene Printing Powders except for their non-dusting physical form. Like the Powders they are incapable of alteration or deterioration through drying out, settling or freezing. When added to the printing paste they work in quickly, yielding even more finely divided dyestuff dispersions than the corresponding paste products. For this reason a more complete reduction is obtained, resulting in sharper prints. Fine lines and stipple effects are brought out with the same color depth as broad stripes. National Aniline & Chemical Co.

NATIONAL CARBANTHRENE PRINTING BLUE GCD FLAKES

For description see National Brilliant Indigo 4BR Printing Flakes. National Aniline & Chemical Co.

NATIONAL CARBANTHRENE PRINTING BLUE GREEN FFB FLAKES

For description see National Brilliant Indigo 4BR Printing Flakes. National Aniline & Chemical Co.

NATIONAL CARBANTHRENE PRINTING FLAVINE GC FLAKES

For description see National Brilliant Indigo 4BR Printing Flakes. National Aniline & Chemical Co.

NATIONAL CARBANTHRENE PRINTING GOLDEN ORANGE RRT FLAKES

For description see National Brilliant Indigo 4BR Printing Flakes. National Aniline & Chemical Co.

NATIONAL CARBANTHRENE PRINTING VIOLET 2R FLAKES

For description see National Brilliant Indigo 4BR Printing Flakes. National Aniline & Chemical Co.

NATIONAL SHAMPOO NO. 172 and 385

Soapless, foaming, oil-free hair shampoos. Viscous liquids, colored and perfumed to customers' requirements. Unaffected by hard water or even sea water. No harsh after-effects on hair, scalp or hands. Vinegar and lemon rinses unnecessary. No. 385 for normal skins, No. 172 for excessively dry skins. National Aniline & Chemical Co.

NEO SPECTRA MARK I

A new high color carbon black developed primarily for use in synthetics and characterized by very easy grinding properties as compared to other blacks of the same color intensity. Produces a brilliant black film with a depth of color decidedly on the blue side. Binney & Smith Co.

NEO SPECTRA MARK II

Another new carbon black in the Neo Spectra series whose description is essentially the same as that of Neo Spectra Mark I. Differs in exhibiting a slightly lower color value. In the range of high color carbon blacks, however, this black is outstanding in all around quality since it offers very high color in combination with good processing properties. Binney & Smith Co.

NEO SPECTRA MARK III

The third black in the Neo Spectra series is different from Mark I and Mark II in having a lower color value. This black again is featured by an exceptional blue tone and lower oil absorption as compared to other blacks of the same color intensity and is used to best advantage in synthetic and oleoresinous vehicles. Binney & Smith Co.

NEVILLAC

Phenol-Indene-Coumarone resin soluble in alcohol, aromatics, and petroleum thinners. Widely compatible making it an exceptional resin for hot melt and solvent type adhesives. A plasticizing resin for which no other plasticizer is necessary. Compatible with nitrocellulose. The Neville Co.

NEVILLITE

Water-white, cyclo-paraffin resin offering light stability, outstanding solubility in petroleum thinners, mineral oils. Highly compatible. Odorless and tasteless. Excellent resistance to water, alkalies, acids, alcohol. A superior resin for white enamels, white rubber compounding, can linings, special adhesives, and the new synthetic lacquers. The Neville Co.

NOPCO CP

A new lubricant for worsted stock, superior to olive oil in the preparation of worsted tops because of its low viscosity which results in uniform spreading. This enhances the lubricating power during carding and combing to keep the fibre breakage at a minimum, while subsequently developing the desirable drag, upon storage of the tops, necessary for good drawing and spinning. This product has the additional features of being resistant to rancidifyng influence, is entirely saponifiable, hence easily removed, eliminates static electricity, is not a blend and is economical to use. National Oil Products Co.

NOPCO POLISH # 1905

A stable, white emulsion of hard waxes used to give a high polish to leather. It is easily applied, buffs up to a high lustre very quickly. National Oil Products Co.

NOPCO 2105 (BLB)

A softener finish for rayon and acetate fabrics. An aqueous solution of less than 1% strength applied to synthetic woven or knitted fabrics produces a very soft, greaseless and smooth hand. Practically effective on acetate yarns to produce the pliability required for draping quality. National Oil Products Co.

NUBA

Dark thermal-softening resinous pitch having outstanding toughness and elasticity. Unusual penetration and wear-resisting qualities. Excellent binding strength. A money-saving possibility in rubber compounding, composition floor tile, molding compounds, adhesives. The Neville Co.

OIL, PHOSPHORATED CASTOR

A viscous, oily, clear liquid, soluble water. Uses: assistant in dyeing, printing, and finishing textiles. Unsaponifiable matter, 0.24%; iodine value, 129; melting point, below 50° F.; oxidized fatty acids, 39.48%; combined phosphate (P_2O_5), 5.46; total fatty oil, 60.87; ash, 18.51. Containers: 50 gal. drums. Victor Chemical Works.

OIL, PHOSPHORATED COD

A completely phosphorated cod oil, readily emulsifying with water. Unsaponifiable matter, 1.62%; iodine value, 137; melting point, 77° F.; oxidized fatty acids, 1.36%; total phosphate as P_2O_5, 9.55; combined phosphate as P_2O_5, 9.40; total fatty oil, 59.23; ash, 17.65. Used in leather industry as a fat-liquoring agent, and as assistant in dyeing, printing, and textile finishing. Containers: 50 gal. drums. Victor Chemical Works.

OIL X-1 RESINOUS

100% coal-tar origin, a low-cost dark brown viscous liquid having high content of inert resin. Water-proof, non-drying, and has good binding strength. Large quantities used in rubber softening, plasticizing, and reclaiming. Valuable possibilities for felt impregnation, battery-box manufacture, and adhesives. The Neville Co.

OIL, ROZEEN

Substitute for rosin oil, insoluble in water but miscible with alcohol and vegetable oils. Emulsifies and saponifies easily with all alkalies. Acid value (mgms. KOH/gm) 74.8. Rozeen Oil binds added water somewhat similar to lanolin and increases the adhesion and plasticity of latex, waxes, leather, rubber, etc. Suggested for use in printing inks, varnishes, rubber and rubber reclaim, brewers' pitches, lubricating oils and greases, insulating oils and compounds, adhesives (non-aqueous), putty, oil cloth, waterproofing, etc. Glyco Products Co., Inc.

ORTHOSIL

A dry, white, free-flowing material containing sodium oxide and silicon dioxide. It is an anhydrous material completely soluble in water. Odorless and tasteless. Excellent resistance to cleaning operations.. Its solutions are remarkably efficient in cleaning ferrous metals preparatory to painting, plating, and vitreous enameling. Pennsylvania Salt Mfg. Co.

PARADENE

A new dark low-cost, coal-tar resin available in 3 grades ranging from 75-140° C. melting pt. Widely compatible, with excellent resistance to water, acids, and alkalies. Large tonnage available. Recommended for rubber compounding, aluminum paint, mastic floor tile, protective coatings. The Neville Co.

"PARADURA AV"

A 100% phenol-formaldehyde resin, primarily developed for aluminum vehicles. It has distinct advantages when formulated as rust inhibitor, protective primers and dark colored paints, with exceptional durability. Also, it is low in price and permits the formulation of varnishes at comparatively low costs. Stroock & Wittenberg Corp.

"PARADURA 273"

A resin high in phenolic condensation content, developed for exceedingly fast-drying varnishes. It produces varnishes—8 to 12 gallons in China wood oil length—which have remarkable elasticity. Stroock & Wittenberg Corp.

"PARADURA 367"

Our latest development in 100% phenolic resins. This resin, due to a new process of manufacture (patents now pending) and the use of new materials, produces varnish films of unexcelled durability with definitely sharper air-drying qualities. Because it retards to some extent polymerization of China wood oil, great latitude in formulation and ease of manipulation are some of its important characteristics. Stroock & Wittenberg Corp.

"PARADURA 540"

A 100% terpene-phenolic-formaldehyde, partially condensed resin; that is—a further condensation takes place upon heating; it can be used by itself with oils, or in the presence of other resins such as Ester Gum. Produces China wood oil varnishes that are somewhat slower in air-drying than Paradura 367 or Paradura 10-P, but upon baking at somewhat higher temperatures (220-240° F.) undergoes a further reaction and gives films of exceptional hardness and resistance to acids and alkalies. Can also be used in the so-called "let-down" varnishes (in admixtures with Ester Gum), where further condensation of the heat-reactive resin hardens the Ester Gum and has a bodying effect on oils. However, the usual care must be exercised in cooking such varnishes, due to frothing caused by the further condensation of the heat-reactive resin. It must be borne in mind that the "let-down" method gives mechanical mixtures of resins (when using Ester Gum and pure phenolics) and does not produce varnishes of the same good quality as those which can be secured with the modified phenolic resins. Stroock & Wittenberg Corp.

"PARAMET" ESTER GUM No. 80

Has the highest melting point of the "Paramet" Ester Gum line. Hardness of this Ester Gum was achieved by finely controlled variations in the manufacturing process—not by the use of metallic oxides or other hardening or modifying agents. Aside from its hardness, Ester Gum No. 80 possesses pale color and complete solubility in mineral spirits. Stroock & Wittenberg Corp.

"PARAMET" 4X ESTER GUM

Developed primarily for use in nitrocellulose lacquers. It possesses the palest color of the "Paramet" Ester Gum group, and is completely soluble in all commonly used lacquer solvents. Stroock & Wittenberg Corp.

"SPECIAL PARANOLS" "PARANOL LB No. 1" "PARANOL LB"

PARANOL LB No. 1 and PARANOL LB are non-phenolic resins, in which the natural resin is modified substantially with an organic acid condensate. These resins were primarily developed for use in nitrocellulose lacquers, to which they impart superior hardness of film, gloss and resistance to polishing oils. Being resistant to ultra-violet light, these resins materially increase the durability of lacquers. Stroock & Wittenberg Corp.

"PARANOL 100"

A modified phenolic resin of high condensation content, developed especially for tough-wearing floor varnishes, porch-and-deck enamels, rubbing varnishes and primers. Is less soluble than the standard types of Paranol, and imparts to varnishes the characteristics of tough-wearing and hard films. Ease of manipulation in the kettle, however, is still maintained —and varnishes of good gasproofness and durability are easily secured by the use of this resin. Stroock & Wittenberg Corp.

"PARANOL 200"

Paranol 200, like Paranol 100, is a special phenolic resin of high condensation content with certain variations in the composition and process which insure the following important features: The melting point of the resin is the highest in the Paranol line, and it is the least soluble in mineral spirits. It is pale in color and produces China wood oil varnishes that are gasproof, with pale film, excellent color-retention, good alkali-resistance and excellent durability for a modified phenolic resin. Of importance is its property of imparting heavy viscosity to oils other than China wood, and retaining good air-drying properties. Stroock & Wittenberg Corp.

"PARANOL 500"

Paranol 500 is a modified phenol-formaldehyde type resin, higher in condensation content than the standard Paranols. It is slightly higher in cost than the standard Paranols, but produces finishes having special features: longer China wood oil varnishes that will be gasproof, extremely pale film, good color-retention and excellent alkali-resistance. Paranol 500, due to its greater condensation content, imparts to varnishes better weather-resistance than the standard Paranols. Paranol 500 is manufactured under patented processes, insuring a uniform product both as to physical and chemical properties—as well as ease of manipulation. Stroock & Wittenberg Corp.

PARANOL 1600

A modified phenol-formaldehyde resin similar to Paranol 500 Hard. It imparts to varnishes all the properties of Paranol 500, but has the added feature of being somewhat sharper in drying qualities in varnishes of the same oil length. Paranol 1600 is slightly higher in cost than standard Paranols, because of its greater condensation content. Like Paranol 500, it is manufactured under patented processes, insuring a uniform resin, both as to physical and chemical properties, ease of manipulation and a guarantee as to the uniformity of the varnish. Stroock & Wittenberg Corp.

PARANOL 1639

A new addition to the group of special Paranols, has a higher melting point than Paranol LN-100, and one of its prime features is the bodying of oils to a greater extent than any other resin of this type. It supplements Paranol LN-100 where shorter varnishes are required, and especially where those containing a large proportion of oils other than China wood oil are preferred. Particularly adaptable to the printing-ink industry, as well as the tin-decorating varnish line. In common with other grades of Special Paranols, it is completely compatible with nitrocellulose. Stroock & Wittenberg Corp.

PARANOL 1640

Paranol 1640 (like Paranol 1639) is a new addition to the group of Special Paranols. It is similar to Paranol LN-100 insofar as ease of cooking manipulation is concerned, but was especially designed for use in short and medium oil-length vehicles for white and light-tinted shelf goods enamels. Shows comparatively little deterioration in drying speed on long storage; it has excellent color and color-retention. Stroock & Wittenberg Corp.

PARIS BLACK #2

An improved grade of pure carbon pigment for use in making black or gray paper. Product represents an acid and alkali proof black pigment that is absolutely fast to light with improved dispersibility in beater stock. Binney & Smith Co.

PENTARYL A

Pentaryl A is a high boiling, amylated aromatic hydrocarbon. In spite of its high Engler distillation range of 313-338° C. it can be distilled under atmospheric pressure without appreciable decomposition. Pentaryl A is a stable, neutral, unsaponifiable hydrocarbon with solvent properties similar to those of aromatic hydrocarbons in general. The Sharples Solvents Corp.

PENTARYL B

Pentaryl B is an amylated aromatic hydrocarbon (B. P. 364-404° C.). Because of its favorable behavior in the presence of ultra-violet light, its chemical stability and its low vapor pressure, Pentaryl B is a desirable plasticizer for rubber resins, as well as a number of other synthetic resins and asphaltic materials. The Sharples Solvents Corp.

PENTASICON T

A penetrant and dispersant. Exhibits these properties in very weak solution (less than 0.5%), and they are not affected in the presence of mineral salts or acids as normally used. Pentasicon T maintains its dispersing and penetrating properties over a wide pH range, and because of its remarkable stability it may be used to overcome conditions arising from hard water. Finds use in all processes where penetration and dispersion are essential to greater efficiency. Merck & Co.

PERMANITE

A new granulated magnetic iron compound, prepared for electrical use. The normal permeability is about 16 and it is used in making molded magnetic cores for I.F. transformers in radio circuits up to 10 megacycles. This property suggests use in loading core coils, cores for filter reactors, and the absence of lamination hums suggests an important application in relays. Foote Mineral Co.

PHTHALIC ANHYDRIDE

M. W. 148; Melt. Pt., Minimum 130.5° C. This important product for the use of the Resin, Dyestuff and Synthetic Chemical Industries is the result of improvements in the process of manufacture, giving a product of high purity and clean white color. Its convenient flake form allows rapid reaction without excessive dusting. It is packaged in new tongue and groove slack barrels with paper lining, holding approximately 266 lbs. The Barrett Co.

PINK 111

A hydrochloride of diethyl-m-amino-phenolphthalein, or tetraethyldiamino-o-carboxy-phenylxanthenyl chloride. A violet red powder giving a brilliant pink color to a water solution. Only recently adopted for use in permanent wave solutions. Interstate Color Co.

PITCH

A high quality type of wood pitch obtained as a by-product of the paper industry. Used successfully in production of floor and molding compounds. Industrial Chemical Sales Division, West Virginia Pulp & Paper Co.

PLASTICIZER 3GH

Plasticizer 3GH effectively increases the flexibility of "Vinylite" and many other synthetic resins. It is also an excellent plasticizer for cellulose esters and has the remarkable characteristic of being effective at low temperatures even when used in moderate amounts. Plasticizer 3GH has a low vapor pressure and water-solubility, while its resistance to discoloration under the influence of ultra-violet light is great. Carbide and Carbon Chemicals Corp.

POLYMERIC METHACRYLATE RESINS

Polymeric Methyl Methacrylate; Polymeric n-propyl Methacrylate; Polymeric Isobutyl Methacrylate; Polymeric n-Butyl Methacrylate. The 4 polymeric methacrylate resins have almost an unlimited application to general industrial work in the form of coating compositions and binding and stiffening agents. They have a wide range of physical properties for thermoplastic materials, and requirements for most applications can be met by the proper choice of a plasticized or unplasticized methacrylate resin. E. I. du Pont de Nemours & Co.

POLYRIN

(Glycol Glyceryl Laurate) Almost water white liquid. Self dispersible in cold water. Soluble in alcohol, hydrocarbon solvents and most oils. Free from soaps, alkalies, amines and inorganic salts. Emulsifying agent giving emulsions with a pH below 7. Reduces surface tension, has excellent detergent properties. Suggested for emulsions for cosmetics, leather, textiles, paper, etc. Also has interesting properties as a dry cleaning soap base. Glyco Products Co., Inc.

POLYSTYRENE

A machineable, easily molded, glass-clear plastic with unlimited color possibilities.

Molding temperatures, °F.	293-375
Molding pressures, No./sq. in.	300-30,000
Compression ratio	2.5
Specific gravity	1.054
Specific volume, cu. in./No.	26.3
Tensile strength, No./sq. in.	3500-6000
Impact strength, ft. lb./sq. in.	1.0-1.5
Breakdown voltage, 60 cycles volts/mil (instantaneous)	2600
Dielectric constant, 1000 cycles	2.65
Power factor, 1000 cycles	0.0002
Softening point, °C.	105-115
Refractive index	1.59
Effect of weak acids	no effect
Effect of weak alkalies	no effect
Effect of strong alkalies	no effect

Effect of solvents—soluble in solvents of benzene or chlorinated aliphatic types.

Proposed Uses: In paints, varnishes, etc., molded products, and electrical insulation. Dow Chemical Co.

PROPYLENE LAURATE

A non-hygroscopic, self-emulsifying oil soluble in alcohols, oils, etc. Of particular interest to manufacturers of cosmetic, pharmaceutical and food emulsions, because of its non-toxicity and great degree of purity. Propylene Laurate is wholesome, edible, and of known physiological value. Finds use in the manufacture of emulsions for wood, leather, and metal; and of interest to the paper and textile industry. The Beacon Co.

PROPYLENE STEARATE

A wax-like ester of unusual purity which is finding use as an emulsifying wax and base in the cosmetic and pharmaceutical industries because of its non-toxicity and great degree of purity. Propylene Stearate acts as a thickening agent and aids materially in the suspension of organic and inorganic materials in aqueous solutions. The Beacon Co.

PROTOZYME PX

A new development in enzyme de-sizing materials. An efficient catalyst, this product, due to its high diastatic properties, is particularly adapted for de-sizing cotton and other fabrics containing starch. It has excellent softening and swelling action on the fibres, has high liquefying strength and leaves the cloth in excellent condition for subsequent treatment. Is readily adapted to all types of de-sizing equipment. Jacques Wolf & Co.

PROTOZYME TP

An enzyme product of similar character, which is however, a high proteolytic preparation, developed exclusively for the removal of protein sizes such as glue and gelatine, from rayons and acetates. Can be used with all types of equipment. Jacques Wolf & Co.

PRYODINE

A low cost material which in many applications proves effective as a substitute for sulfonated alcohols. It is far more efficient than the usual persalt preparations, and in many respects superior to the fatty alcohol sulfates, especially in the textile industry. The Beacon Co.

PURPLE 223

A sodium salt of diphenyl-disazo-di-8-amino-1-naphthol-3:6 disulfonic acid. A slate grey powder which dissolves with a bluish violet color. Only recently adopted for use in permanent wave solutions. Interstate Color Co.

PYRETHRUM-SULFUR DUSTS

Pyrethrum-Sulfur Dust contains 25% ground pyrethrum flowers and 69% sulfur. Sulfur used passes 98-100% through a 325 mesh screen. Finished mixed dust has a pyrethrins content of .1% and is packed in 100 lb. and 50 lb. fibre drums. Choice between Pyrethrum-Sulfur or Rotenone-Sulfur depends largely upon the pests to be controlled and immediate needs of the user. Stauffer Chemical Co.

RED 110

A sodium salt of sulfo-di-o-tolyldiamino-o-carboxy-phenyl-xanthenyl. It is a violet red powder which is readily soluble in water with a bluish or violet red color. The violet brilliance is brought out with alcohol. Only recently adopted for use in permanent wave solutions. Interstate Color Co.

RESIN E65

A dark red transparent semi-solid. Soluble in alcohol and acetone. Dispersible, but not completely soluble in hydrocarbons and oils. Entirely insoluble in water. Films of Resin E65 are non-drying. Suggested for use as a plasticizer and binder. The Beacon Co.

RESINOL

A water white viscous liquid resin—water soluble, miscible with polyhydric alcohols. Resinol is entirely non-toxic and non-corrosive. Forms glossy, transparent films which are tacky and non-drying. Finds use in adhesives, especially for Cellophane; textile lubricants; and softeners; plasticizer for other water soluble resins; glues; gums; and as bodying agent for cosmetics. The Beacon Co.

RESOID-W

An amber-colored, slightly viscous liquid resin. Soluble in water, miscible with glycol and alcohol. Resoid-W forms transparent films of high gloss and extreme hardness. On thoroughly drying, these films become water insoluble. Finds use to replace shellac where waterproofness and high gloss are important factors. The Beacon Co.

RESOLIN

A synthetic resin in powdered form having many of the properties of shellac gum. Forms transparent films of high gloss and extreme hardness. A water solution of Resolin dries water insoluble. Suggested for use in bright-drying wax emulsions, shoe finishes, and water repellent textile emulsions. The Beacon Co.

REVOLITE LAUNDRY ROLL COVER

Revolite* asbestos laundry roll covers are processed with a flexible Bakelite resinoid. Used on flat work ironers in commercial laundries. Covers are immune to ordinary acids and alkalies encountered in laundries. Give increased production due to more rapid drying. Long service life due to resistance to combined effect of heat and moisture. No staining. No wet rolls. No rough dry. Low operating costs. Atlas Powder Co.

REZYL 330-5

Is an oxidizing type alkyd resin free from phenol or natural resin derivatives. It provides an excellent combination of quick and thorough drying, color retention, adhesion, water resistance and outdoor durability. Suggested especially for enamels for spray application to be air-dried or baked at temperatures up to 300° F. American Cyanamid & Chemical Corp.

ROCKRESIN

A cloudy viscous water soluble liquid resin of grayish color. Insoluble in every other liquid. Forms glossy, transparent, flexible films which are non-tacky and extremely hard. These films are somewhat harder and more brittle than Boriresin. Rockresin finds special use as a fireproofing agent. The Beacon Co.

ROTENONE-SULFUR DUST

A powerful insecticide for the control of most insects attacking vegetables, fruits, ornamentals and flowers, because it is extremely poisonous to many insects while being relatively non-poisonous to humans. Heretofore carriers of rotenone dusts consisted largely of inert materials but now one is available with sulfur as the carrying agent. Stauffer Chemical Co.

"RPA No. 2" RUBBER PEPTIZING AGENT

(NAPHTHYL - BETA - MERCAPTAN.) A white, waxy material, which destroys the nerve of crude rubber without impairing quality, and reduces viscosity of rubber cements. This product was developed for the purpose of improving the efficiency and economy of the rubber milling operation by bringing about a decrease of time and power necessary to produce a desired plasticity in the mastication of crude rubber. E. I. du Pont de Nemours & Co.

SALAMIDE

(Amide of Salicylic Acid) White, crystalline powd.; M.P. 138° C. Somewhat more soluble in water than Salicylic Acid. Therapeutic effect of salicylates without gastric disturbances. R. W. Greeff & Co., Inc.

SANTOBANE 100

A new cyclohexylamine derivative which has been developed for special control purposes in the insecticidal field. It has proven of special virtue in controlling red spider on roses, and it is also effective on leafhoppers and thrips. It is also toxic against animal parasites, such as fleas on dogs and lice on chickens. Monsanto Chemical Co.

* *Registered Trade-Mark.*

SANTOCEL

A silica aerogel, so-called because it is a gel in structure although the fluid medium is air instead of water or some other liquid. It has an apparent density of about 7 lbs. per cu. ft. and for this reason has an extremely low coefficient of heat transmission. In addition, it is useful as a thickening agent for volatile and non-volatile liquids, as a dispersing agent for pigments, dyestuffs, etc., and as an anti-caking agent to keep hydroscopic materials free flowing. Merrimac Chemical Co., Division of Monsanto Chemical Co.

SANTOFLEX B

A rubber antioxidant which is extremely effective in increasing the resistance to oxidation of such rubber stocks as tires, tubes, belts, hose, heels, soles, and other articles subject to deterioration by oxygen under service conditions. Santoflex B also increases the resistance of rubber tire treads and belting to cracking by repeated flexing. Rubber Service Laboratories, Division of Monsanto Chemical Co.

SANTOMERSE

A very efficient wetting agent, readily soluble in water and alcohol and in a number of other organic solvents. Possesses very strong and characteristic wetting-out, emulsifying, spreading and penetrating properties and is inert chemically to practically all ordinary chemicals. Rubber Service Laboratories, Division of Monsanto Chemical Co.

SANTOPHEN 20-S BRIQUETTES

A technical form of sodium pentachlorphenate, marketed in the form of 1-oz. briquettes as a convenience to the user. Sodium pentachlorphenate is a very effective fungicide and preservative, and finds application in the preservation of wood, cellulosic products, glue, paste, and a variety of other industrial organic materials. Monsanto Chemical Co.

SANTOTEX

A dyestuff assistant which has been developed to meet certain problems in the dyeing of woolen goods. Some acid dyestuffs are ordinarily difficult to dye and are classed as unlevel. Addition of Santotex to the bath with these dyestuffs makes it possible to control the rate of absorption of the dyestuff by the goods so that level dyeing will result. Merrimac Chemical Co., Division of Monsanto Chemical Co.

*SODACET

Special 90% Sodium Acetate. $Na\ C_2H_3O_2 \cdot \frac{1}{2}\ H_2O$. White powd. Loses water on heating to give anhydrous form about 75° C. pH 7-8. Contains 50% more sodium acetate pound for pound than the regular commercial 60% material. Suitable for all uses of ordinary or anhydrous sodium acetate: manufacture of acetic anhydride, cinnamic acid, intermediates, organic chemicals, para red, synthetic dyestuffs, pharmaceuticals, soaps, Schweinfurt green, dry colors, copper acetate pigment, dehydrating agent; mordant and resist in dyeing and printing textiles; photographic and laboratory reagent; purifying glucose; extracting alkaloids from opium; preserving meats; electroplating reagent; in medicine. Containers: non-returnable metal drums (250 lbs.). Niacet Chemicals Corp.

SODIUM ACID PYRO PHOSPHATE

Produced from pure phosphoric acid. White, water-soluble powder, practically tasteless. Meets all U. S. Pure Food Law requirements. Uses: A delayed leavening agent in baking powder and self-raising flour, active only under oven temperatures, thus conserving its gas strength. The American Agricultural Chemical Co.

SODIUM ALUMINATE

The principal raw material used in the process of manufacture of Aero Sodium Aluminate is the highest quality native bauxite.. The caustic soda used is selected for its purity, and Cyanamid's extensive laboratory facilities have served to bring the process to a point of efficiency where a product of outstanding quality is marketed at competitive prices. American Cyanamid & Chemical Corp.

SODIUM ALUMINUM SULFATE

Aero Sodium Aluminum Sulfate conforms in all respects with the existing State and Federal requirements as to purity. It has a neutralizing value of more than 100% of its theoretical strength. This product is another example of the results of the use of Cyanamid's own raw materials under continuous chemical control in Cyanamid laboratories. High grade American bauxite from the Company's own mines, sulfuric acid of exceptional quality, and the purest of alkalies are combined to produce a product of superior grade. American Cyanamid & Chemical Corp.

SODIUM BICARBONATE, U.S.P.

This important chemical has just been added to Columbia's line of manufactured alkalies. It is produced as U.S.P., Technical, and Special Free Flowing for the flour milling industry. Two physical forms, powdered and granular, are also available. Columbia Alkali Co.

SODIUM BOROFORMATE

($NaH_2BO_3.2HCOOH.2H_2O$) This is a white cryst. solid. M.P. 110-111° C. whose aqueous solution has a pH of approx. 8.5. It is a very good buffering agent toward both acid and alkali. Used together with salicylates, it enhances the bactericidal action of the latter. Victor Chemical Works.

SODIUM ORTHOSILICATE

($2Na_2O.SiO_2.6H_2O$) Snow white flakes which are quickly soluble in hot or cold water; lose water of crystalization without melting and melt at 1118° C.-2044° F.; produce solutions of very high pH value and dispersing power safely buffered by the silica content; effective for metal cleaning, textile finishing, laundries, and paint removing. Standard Silicate Division, Diamond Alkali Co.

SODIUM SULPHONAPHTHENATE

(Sulphohexahydrobenzoate.) A high fat content sulfonated naphthenic acid. The Beacon Co.

SOLVENOL

A colorless, non-toxic solvent free from objectionable odors. Finds use mainly in beverages, food products, pharmaceuticals, and cosmetics, as a non-toxic solvent. However, due to its high solvent powers and other features, is of interest to numerous other industries. Solvenol has very strong solvent power and is particularly recommended for internal purposes. The Beacon Co.

SOLVENTENE

SOUTHLAND PT #150. An excellent deodorant for petroleum thinners, fish oils, etc. Solventene has unusual solvent and plasticizing action on rubber, therefore is recommended in the manufacture of reclaimed rubber; also a good solvent for use in rubber molded articles and coating compounds; suggested to replace turpentine in paint and varnish to produce results similar to Dipentene. The Retort Chemical Co.

SOLVOL

SOUTHLAND PT #120. As a thinner in lacquer, Solvol has a tolerance greater than Tolulol. Is used in sanitary drip machines for its odor upon evaporation and where a powerful solvent is required. The Kauri Butanol Test is 112. The Retort Chemical Co.

SPREADER-STICKER

A combined spreading, sticking and wetting agent designed especially for use with agricultural sprays. When Spreader-Sticker is added to spray solutions, it provides them with improved physical properties. First, to assure more uniform and complete coverage; 2nd, to make the spray stick longer; 3rd, to give the spray better contact with the bodies of insect pests by more thorough wetting, despite hard, glossy, protective body surfaces or waxy coverings. Grasselli Chemicals Division, E. I. du Pont de Nemours & Co.

STABILIZER NO. 1

Chemically, Iso-Thymol having a boiling point of 244-249° C. Soluble in oils and caustic. Phenol coefficient of 24.4 on B-Typhosus. Effective preservative, anti-oxidant for oils, and has some anti-mildew properties. Useful in textile finishing compounds, gums and starches, emulsions, casein and latex compounds. Givaudan-Delawanna, Inc.

STICKER FOR INSECT SPRAYS

Rosin Residue Emulsion is a superior sticker for sprays used in the control of insects attacking ornamental shrubs, shade trees, and flowers. Hercules Powder Co.

"STIXSO"

A recent discovery in the process of manufacturing silicate-clay adhesives has made available a new material, called "Stixso," which is of great interest to the corrugated paper board industry. Properties of the liquid and the solid components are so adjusted as to regulate accurately degree of penetration into the paper surface to which the adhesive is applied. The adhesive remaining on the surface sets rapidly and stays where it is put. Setting process is not a heat reaction so that high speeds are possible without extreme heat. This is a distinct advantage in plants where continuous increased production is vital. Resultant product gives a board of unprecedented stiffness without warping or distortion.

New adhesive is able in its standard form to deal with great variations of paper quality and machine adjustment encountered in the manufacture of container board. Later, grades of the new adhesive, silicate of soda, will be devised to meet the requirements of industries other than the container board. Philadelphia Quartz Co.

STYRENE

95%

Sp. gr., 0.903 at 25/25° C.; boiling pt. range, 143-146° C. at 760 mm.; refractive index, 1.541; melting pt., —33.2° C.

98%

Sp. gr., 0.9033-0.9036 at 25/25°C.; boiling pt. range, 144.4-145.5° C. at 760 mm.; refractive index, 1.5425-28; melting pt., —32.2°C.

99.9%

Sp. gr., 0.905 at 25/25°C.; boiling pt. range, 144.5-146.3° C. at 760 mm.; refractive index, 1.5438-40; melting pt., —30.8° C. Proposed Uses: 1. Raw material for the polymerized styrene. 2. For impregnation, where polymerization in place is desirable. 3. Organic synthesis. Dow Chemical Co.

*SULMOR

Sulfur plasticized and modified with an asphaltic compound. Sp. Gr. 25° C., not less than 1.20; Flash Pt. (Cleveland Open Cup) °C., not less than 200; Softening Pt. (Ball and Ring) in °C., not less than 65, nor more than 75; Penetration 0°C. —200 g.—60 sec., not less than 20; Penetration 25°C.—100g.—5 sec., not less than 28, not more than 34; Penetration 46°C.—50 g.—5 sec., not more than 81. "Sulmor" is a new jointing material designed particularly for use in expansion joints. Has given excellent results when used in the construction of brick roads. Its low temperature susceptibility recommends it where a plastic, flexible, waterproof jointing material is desired. It does not exude in hot weather neither is it brittle and hard in winter. Can be applied in the same manner in which asphalt is used. Density insures complete filling of all joints and voids. Since it shows no tendency to cold flow, it will not creep. Use is suggested in construction of brick roads, as an expansion joint for concrete roads, and in the construction of flat roofs. Texas Gulf Sulphur Co.

* *Registered Trade-Mark.*

SULPHOSOL

A soluble oil base of unusual strength and low cost. Sulphosol will emulsify more than 5 times its volume of paraffine oil to give stable emulsions. Mixing at room temperature is all that is required to produce soluble oils which are instantly emulsifiable with water in any proportions. The Beacon Co.

SULPHOSOPES "E" "F"

Two new sodium salts of sulfonic acid which are very powerful emulsifying agents. Their low cost coupled with their amazing efficiency has rapidly brought them to the fore for large scale emulsification. Sulphosope E for oil in water emulsions, Sulphosope F for water in oil emulsions. The Beacon Co.

SUNBURN PREVENTIVE NO. 2

Sunburn Preventive No. 2 is a new sun screen for use in sun-tan preparations. It effectively filters out 95% of the burning rays between 2800 and 3500 Angstrom units. When used in proportions of 3% to 5% in the finished preparation, it will permit the skin to acquire an even natural tan without burning. Givaudan-Delawanna, Inc.

SUPERCLEAR

An improved type of printing thickener which owes its clarity and colorlessness to a highly specialized process of refining and not to bleaching. Because of this process of refining Superclear stays clear—it does not oxidize or turn dark when exposed to the air. Superclear has been found superior for clear, sharp prints, fine impressions, deep penetration, light colors and resist printing. Jacques Wolf & Co.

SUPER-FLEX "FABRIKOID"

PYROXYLIN-COATED AND IMPREGNATED FABRIC. A new patent finish on 4800 quality "Fabrikoid." In addition to its permanently lustrous surface, which can be restored to its original sleek and glossy condition by polishing with a damp cloth, it has astonishing durability and flexibility. This product has many uses, one of which is in making moderately priced ladies' handbags. E. I. du Pont de Nemours & Co.

SUPERSILICATE

($1.6Na_2O.SiO_2.5H_2O$) A white free flowing granular product readily soluble in hot or cold water; melting pt. 80°C.-176°F.; produces solutions of high pH value and dispersing power safely buffered; used for cleaning concrete floors, metal cleaning, in laundries, and in cleaning compounds. Standard Silicate Division, Diamond Alkali Co.

TANARC

A synthetic zirconium-titanium ferrate. As a major ingredient in welding rod coatings, Tanarc promotes arc stability, reduction of splatter loss and formation of a suitable, protective slag, thus promoting a sound weld. Foote Mineral Co.

TEGLAC 161

An extremely hard, pale alkyd resin in which the modifying agent is principally natural resin acid. It is suggested for cooking with drying oils for oleo-resinous varnishes which combine paleness of color and excellent color retention on baking or ageing. In addition this resin is useful in nitrocellulose gloss lacquers and sanding sealers. American Cyanamid & Chemical Corp.

BACKED BY EXPERIENCE

Production of Chemicals in the Harshaw plants is based on tried and proven methods of manufacture—methods evolved by experts who for forty-five years have worked in co-operation with customers . . . . Harshaw Chemicals are designed to fit your requirements . . . . Use Harshaw Quality Chemicals in your process and compare the difference.

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TERGITOL*

The "Tergitol"* Penetrants are a group of powerful wetting and penetrating agents developed to speed up aqueous processes. When added to water or water solutions in extremely small quantities (0.1-0.5%), they markedly lower the surface tension causing the liquid to wet surfaces more readily. This property is speeding up processes in the textile, leather, paper, ceramics, pharmaceutical, metal, insecticide, cosmetic and many other industries. Since the "Tergitol" wetting agents are stable in acid, alkaline and metallic salt solutions, as well as being unaffected by hard water, oxidizing or reducing agents, the chemical industry is also finding them of intense interest wherever aqueous processes are involved. Carbide and Carbon Chemicals Corp.

TETRAETHYL BENZENE

$C_6H_2(C_2H_5)_4$. Boiling pt. range, 245.7-250.7° C. at 760 mm.; sp. gr., 0.882 at 25/25°C.; dielectric constant, 2.24; flash pt., 107° C.; fire pt., 125° C. Proposed Uses: plasticizer, heat transfer medium, solvent, and lubricant. Dow Chemical Co.

TETRA SODIUM PYROPHOSPHATE

A soluble sodium phosphate which is used for rendering hard-water soaps soluble. It finds application in detergents, textile finishing, dish washing and other places where it is desirable to prevent the precipitation of calcium soaps. Monsanto Chemical Co.

TETRASODIUM PYROPHOSPHATE, ANHYDROUS

$Na_2P_2O_7$. An excellent emulsifier for oils, fats, dirts, and usual types of soils. Exerts considerable solvent action on calcium soaps and emulsifies any undissolved portions. pH of 9.6 to 10.0 in usual solutions is neither so low as to decompose soaps nor so high as to injure skin or fabrics. Generally used in detergents of various types. The Warner Chem. Co. Division, Westvaco Chlorine Products Corp.

TETRASODIUM PYROPHOSPHATE, CRYSTAL

$Na_2P_2O_7{\cdot}10H_2O$. For uses see Tetrasodium Pyrophosphate, Anhydrous. The Warner Chem. Co. Division, Westvaco Chlorine Products Corp.

THIOSINAMINE

(Allyl Thiourea) Colorless crystals, slight garlic odor; M.P. 74° C. Freely soluble in water and alcohol. Used in photographic emulsions as a sensitizer and also for sepia toning of bromide paper; in medicine as a keratolytic. R. W. Greeff & Co., Inc.

"TI-CAL" TITANIUM-CALCIUM PIGMENT

A titanium-calcium pigment of unusual color, opacity and economic value in flat and gloss paints, enamels, rubber and paper. "TI-CAL" is available in 3 grades with respect to consistency: thin, coded LO; medium, MO and thick, HO. E. I. du Pont de Nemours & Co.

TRIBUTYLAMINE

$(C_4H_9)_3N$ Primary Normal Tributylamine is a pale yellow liquid with a boiling pt. of 216.5° C. and a sp. gr. of 0.778 at 20° C. Only very slightly sol. in water but miscible with most organic solvents. Is strongly basic and its hydrochloric and sulfuric acid salts are water soluble. The Sharples Solvents Corp.

TRIETHYL BENZENE

$C_6H_3(C_2H_5)_3$. Boiling pt. range, 216.4-220.4° C. at 760 mm.; sp. gr., 0.870 at 25/25° C.; dielectric constant, 2.21; flash pt., 83° C.; fire pt., 125° C. Proposed uses: heat transfer medium, solvent, and intermediate. Dow Chemical Co.

TRIGAMINE

Fairly viscous, light colored liquid with pleasant odor. Soluble in water, glycerin, glycols and 50% alcohol. Replaces Triethanolamine in the manufacture of soaps and emulsifying agents which do not oxidize or turn yellow with age. Emulsions made with Trigamine and fatty acids remain white permanently. Trigamine is practically non-hydroscopic at ordinary humidities. It is non-volatile below 100° C. Glyco Products Co., Inc.

* *Registered Trade-Mark.*

TRIGAMINE STEARATE

(The Stearic Acid ester of Trigamine) A light colored, wax-like solid which does not oxidize, discolor or yellow with age. Is useful as an emulsifying agent in place of Triethanolamine Stearate. Trigamine Stearate melts to a thin fluid and not a gelatinous mass as in the case with Triethanolamine Stearate. Glyco Products Co., Inc.

TROCKLIN S

A new stabilized wax emulsion containing particles of extremely small size enabling formation by single bath process of a wax film of remarkable permanence on all fibrous materials, such as cotton, wool, silk, rayon, paper and furs. These wax films have the property of rendering fibers so treated completely water repellent, and knitted fabrics treated with Trocklin S become water resistant, but do not lose their essential property of being permeable to air. Merck & Co.

TRULINE* BINDER

A powdered dry binder, can be used alone or with other binders to produce cores for use wherever metals are cast. Hercules Powder Co.

TURPENTINE

More scientific methods have resulted in a considerable improvement in the quality of destructively distilled wood spirits turpentine. Odor of destructively distilled wood spirits turpentine, one of its objectionable features heretofore, has been greatly improved. Now a highly refined and uniform water white product. Tests prove it super or to gum spirits turpentine. The Retort Chemical Co.

URETHANE (Ethyl Carbamate)

$NH_2CO_2C_2H_5$. A transparent colorless crystalline substance which melts at 46-48° C., and boils at 188° C. Is very soluble in water, alcohol and common organic solvents. Besides being used as a soporific, Urethane offers interesting possibilities in chemical synthesis. U. S. Industrial Chemical Co., Inc.

VA-350

An anti-skinning agent which prevents the skinning of paints and varnishes in the can. While effective for this purpose, it does not materially retard drying time or interfere with the other valuable properties of the paint or varnish. Rubber Service Laboratories, Division of Monsanto Chemical Co.

VINETHENE ETHER MIXTURE

This volatile anaesthetic agent consists of a mixture of 75 parts of ethyl ether and 25 parts of Vinethene. Action of the mixture is essentially the same as that of Vinethene but, in addition, it has several advantageous properties. Although the period of induction is about 15 seconds longer than that for Vinethene; the period of excitement is about 5 seconds longer; and the mixture makes it possible to maintain a more nearly even plane of anaesthesia than with Vinethene. In operations exceeding 30 minutes the mixture has essentially the same excellent qualities generally associated with the use of ethyl ether. Recovery is more prompt than with ethyl ether alone though the mixture causes approximately 5% more post-anaesthetic nausea or vomiting than Vinethene. Merck & Co.

VIOLET 3559

A sodium salt of 1:5 di-o-sulfo-p-tolylaminoanthraquinone. It is a dark violet powder giving a reddish violet solution. Only recently adopted for use in permanent wave solutions. Interstate Color Co.

VITAMIN B_1 CRYSTALLINE

Crystalline vitamin B_1 is synthetic vitamin B_1 chloride hydrochloride which is identical with the vitamin B_1 previously extracted from natural sources. The large scale isolation of the natural vitamin by Merck & Co. from rice polishings according to a process devised by R. R. Williams enabled this worker and his collaborators to determine the chemical structure of the vitamin and to devise a method for its synthesis. The vitamin, 2-methyl-5-(4-methyl-5-beta-hydroxyethyl-thiazolium chloride) methyl-6-aminopyrimidine chloride hydrochloride is now produced on a commercial scale by the condensation of a 2-methyl-5-methyl-6-aminopyrimidine derivative with 4-methyl-5-(b-hydroxyethyl) thiazole. The average American diet is lacking in vitamin B_1 and, apart from providing a source of supply for this dietary need, vitamin B_1 crystalline affords the physician a pure standardized compound for the treatment of vitamin B_1 deficient patients. Merck & Co.

WAX, CANDELILLA, FLAKE, DOUBLE REFINED

M.P. 159 to 160° F. Refining process removes objectionable impurities, such as resins, gums, dirt, moisture, etc. May be used instead of higher priced vegetable waxes as refining process also removes tackiness as far as it is physically and mechanically possible. Innis, Speiden & Co.

WAX, CANDELILLA, LUMP, DOUBLE REFINED

M.P. 159 to 160° F. Refining process removes objectionable impurities, such as resins, gums, dirt, moisture, etc. May be used instead of higher priced vegetable waxes as refining process also removes tackiness as far as it is physically and mechanically possible. Innis, Speiden & Co.

WAX, CARNAUBA, FLAKE REFINED

M.P. 182 to 184° F. A uniformly pure, high grade wax and one of the hardest vegetable waxes obtainable. Used extensively in manufacture of wax polishes due to extreme hardness and high lustre. Innis, Speiden & Co.

WAX, CARNAUBA, LUMP, REFINED

M.P. 182 to 184° F. A uniformly pure, high grade wax and one of the hardest vegetable waxes obtainable. Used extensively in manufacture of wax polishes due to extreme hardness and high lustre. Innis, Speiden & Co.

WAX, J. C. #268, FLAKE, REFINED

M.P. 174 to 175° F. This wax is recommended to be used as a substitute for the higher grades of Carnauba Wax when it is desired to obtain a hard, high grade wax for the manufacture of low priced water emulsions or polishes; or to be used in the manufacture of compositions. Innis, Speiden & Co.

WAX, P. C., LUMP, REFINED

M.P. 164 to 165° F. A wax which can be used either in conjunction with or as a partial substitute for Carnauba Wax. Low in price but has qualities found desirable by many manufacturers. Innis, Speiden & Co.

"WDS" WOOD DYE STAIN SOLVENT

"WDS" wood dye stain solvent was developed specifically for use in the preparation of non-grain raising, non-bleeding and fast drying wood stains. It has high solvency for the water soluble, as well as the spirit soluble acid and direct dyes employed in the staining and graining of wood. "WDS" wood dye stain solvent penetrates deeply and uniformly and gives clear transparent effects. E. I. du Pont de Nemours & Co.

ZATEX LACQUER TEXTILE PRINTING MATERIAL

A new chemical lacquer for textile printing and delustering. Beautiful effects at reduced cost and increased speed. No flushing—excellent definition with fine line or large blotch patterns —either "rag soft" or firmer "hand." Supplied in colors, metallics and clear. Zapon Division—Atlas Powder Co.

ZEPHYR "CAVALITE"

RUBBERIZED FABRIC. A special waterproof compound on a high-grade silk base, that is extremely flexible and highly durable. This new featherweight fabric has been developed particularly for raincoats weighing as little as 14 ounces. Another grade of "Cavalite" is used for hospital sheeting. It is resistant to blood, urine, perspiration and gives greater patient-comfort than the old harsh type rubber sheeting. E. I. du Pont de Nemours & Co.

ZIRCONIUM COPPER ALLOY

A new commercial master alloy, containing 14 to 16% zirconium. Non-ferrous zirconium bearing alloys can readily be produced through the use of this master alloy. Small percentages of zirconium in copper show a marked increase in hardness and desirable electrical properties. Foote Mineral Co.

CHEMICAL SPECIALTIES

HOUSEHOLD
INDUSTRIAL
AGRICULTURAL

- Humectants
- Stop Leak Compounds
- Naphthenic Soaps
- Plating Rack Enamel
- Rayon Size
- New Names and New Goods
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A few of the numerous products in which American Agricultural chemicals play an important part

WHAT ACID-BASE RATIO DO YOU NEED

3 STANDARDIZED ALUMINUM STEARATES

MADE TO SPECIFICATIONS FOR THE PAINT, VARNISH, LUBRICANT, WATERPROOFING AND ALLIED INDUSTRIES

Research has shown that correct acid-base ratio is the prime factor governing the behavior of Aluminum Stearates with various oils and solvents. Mallinckrodt now produces three new grades which can be mixed to give you the ratio of acid to base that your formulas and raw materials require. They are not trademarked or patented mixtures, but definite chemical compounds of highest quality carefully manufactured to exacting chemical standards. You can standardize your formulas and plant procedures with the assurance that each successive lot of these Stearates will give you the same results.

3 NEW STANDARDIZED GRADES OF ALUMINUM STEARATE

1

Aluminum Stearate Technical M (mono-acid)—Produces soft greases. Small quantities produce a definite flatting effect in varnishes, with less tendency to jell formation.

2

Aluminum Stearate Technical T (tri-acid)—With most oils and solvents this grade can be dispersed in higher concentrations than either the D or M grades and will cause less jelling in certain formulas. It is recommended as a flatting agent and for certain types of waterproofing material.

3

Aluminum Stearate Technical D (di-acid)—This is the standard industrial grade most widely used for paints, varnishes, lubricants, and waterproofing materials. Stearate investigations logically start with this grade. M and T grades may be added as modifying agents. A small quantity of the M grade will tend to make greases harder, while the T grade will reduce the tendency to graininess, brittleness, and bleeding in greases and oils.

Order a Trial Quantity Today...

Test the behavior of these new Aluminum Stearates in your experimental laboratory with your own formulas and raw materials; 5 pounds of each of the three grades (M, D, and T) will be sent you prepaid for $3.50. Take advantage of this generous trial offer without delay. Send us the coupon below and see how easily and accurately the acid-base ratio can be adjusted to your varying requirements.

LET THIS COUPON BE YOUR ORDER

SPECIAL OFFER! 5 pounds of Each Grade (M, D, and T) for $3.50.

TWO OTHER ALUMINUM STEARATES

Aluminum Stearate Technical Fluffy is chemically similar to the D grade, but slightly finer and bulkier.

Flatting Agent No. 22 will cause less jelling in certain varnishes than the other grades.

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St. Louis, Mo. **72 Gold Street, New York, N. Y.**

(Address Nearest Office)

Send me your $3.50 Special Offer of trial quantities of the new standardized Aluminum Stearates (5 pounds of each of the three grades—M, D, and T).

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OTHER MALLINCKRODT STEARATES FOR INDUSTRIAL USE:

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Magnesium Stearate Impalpably Powdered

Zinc Stearate U. S. P. XI

Sodium Stearate Technical

Mallinckrodt CHEMICAL WORKS

ST. LOUIS NEW YORK TORONTO
CHICAGO PHILADELPHIA MONTREAL

New Developments in Humectants

By J. R. Frorer

MANY every-day materials such as textiles, regenerated cellulose or Cellophane, tobacco, leather and various forms of glue (as sizing for textiles, printers' rollers, hectograph and flexible glues for binding) must be kept flexible and slightly moist to retain their usefulness. Water alone is an excellent flexibilizer. But, due to the wide range of fluctuations in atmospheric humidity, the moisture content of most substances cannot be kept at the proper value. Therefore, a humectant agent with a suitable humectant range is added to help the material retain its moisture.

What are "Humectant" and "Humectant Range?"

"Humectant" is used to describe that class of hygroscopic materials suitable for incorporation with many materials of every-day use. They are used as agents to attract water to these materials to keep them slightly moist and flexible.

Each humectant has a different "humectant range."

By this is meant the degree of change or range in moisture content in the face of changing relative humidity conditions. Thus, a substance that takes up water readily and to a greater extent in high humidity and loses it readily and to a greater extent when subjected to low humidity is said to have a wide Humectant Range because its moisture content varies widely. Conversely, a substance that takes up water slowly and to a lesser extent in high humidity and loses it slowly and to a lesser extent under conditions of low humidity is said to have a narrow or relatively stable Humectant Range as it varies but little in moisture content under fluctuating moisture conditions.

Value of a "Narrow Humectant Range"

The valve of a material with a narrow humectant range in conditioning is very like the action of automobile springs in leveling out the bumps in the road surface. To secure maximum smoothness the reaction of the springs is controlled by a stabilizer. Similarly, an airplane is balanced by the control surfaces, but a stabilizer is used to give steadier flight in fluctuating air currents.

In the same way, a desirable humectant agent combines affinity for water with stabilizing action on the moisture content. That is, it keeps within a narrow range the moisture content fluctuations caused by wide range humidity fluctuations.

Sorbitol

The sugars, glycerin and the glycols have been available for some time and their use as humectant agents is fairly well known. Sorbitol, however, as a material of industrial interest is very recent. It is found in nature in the berries of the mountain ash, in pears, cherries and other plants but in amounts too low to be of commercial importance. A process has recently been perfected by Atlas Powder Company whereby sorbitol is produced synthetically on a large scale. Production is now under way at their new plant at Atlas Point, near Wilmington, Delaware.

Characteristics of Sorbitol

Sorbitol is a hexahydric member of the polyhydric alcohol family of which glycerin is the trihydric and ethylene glycol the dihydric alcohol. Regular commercial sorbitol is marketed at the present time as a syrup of 15 per cent. water, about 1 per cent. ash and about 0.75 per cent. reducing sugar as impurities. Some physical properties are:

	15% Water	25% Water
Specific Gravity	1.350	1.310
Viscosity at 25° C.	7400 c.p.	300 c.p.
Viscosity at 30° C.	3500 c.p.	130 c.p.
Refractive index at 25° C.	1.4838	1.4622
Solubility in alcohol	Sol. in eq. portions of 92½% alcohol	Infinitely sol. all proportions

The properties of particular interest from the point of its use as a humectant agent are:

1. Permanent fluidity
2. Minimum variation in hygroscopicity
3. Zero volatility
4. High viscosity
5. Insolubility in most organic solvents
6. Stability under conditions of humectant use
7. Freedom from objectionable thermal decomposition products—such as acrolein
8. Compatibility with textiles, leather, glues, tobacco, etc.
9. Freedom from objectionable taste and odor

Hygroscopicity Data

A more detailed picture of the humectant behavior of sorbitol syrup is given by the following table, which gives, for various atmospheric humidities, the amount of water held by 100 parts dry sorbitol, and the concentrations of sorbitol solutions at equilibrium. This behavior of sorbitol is substantially unaffected by moderate changes in temperature.

Relative Humidity	Concentration of Solution at Equilibrium—Wt. % Sorbitol Syrup	Parts Water Held by 100 Parts of Dry Sorbitol
0%	100	0
20	96	4.2
40	89	12.4
60	79	26.9
80	61	64.0
100	0	....

Comparative Behavior of Sorbitol and Other Agents

The relative behavior of sorbitol, glycerin, glycol and invert sugar at 80 per cent. relative humidity and ordinary temperatures is shown below:

Water—Solids Ratio at 80% R. H.

	Solids Concentration of Solution at Equilibrium Wt. %	Parts Water Held by 100 Parts Dry Material
(a) Glycols	39	156
(b) Glycerin	47	113
(c) Sorbitol	61	64
(d) Sugars	81	23

In other words, an article conditioned with materials "c" or "d" will show more resistance to moisture pick-up at high humidities than an article conditioned with materials "a" or "b". And likewise, articles conditioned with "c" will lose less water at low humidities than with an article conditioned with "d". Thus, sorbitol takes up less water at high relative humidities than the other poly-alcohols, and on the other hand, loses less water at low humidities than the sugars. It is this effective moisture stabilizing characteristic of sorbitol that has led to its being termed "a general purpose humectant agent."

Moreover, since sorbitol does not volatilize, as do the lower polyhydric alcohols nor dry out at low humidities as do the sugars, its stabilizing influence is retained under conditions of high temperature and humidity extremes.

In the short time that sorbitol has been available as an industrial material an unusual number of interesting applications of its moisture stabilizing power have been worked out. The mention of a few may serve to point the way to further possibilities and developments.

Glue Mixtures

The flexibilizing or conditioning of glue mixtures is a special and very important application of Commercial Sorbitol.

The elasticity, ease of forming or molding, and hydrophilic character of gelatine jellies would make them very useful technically, but straight gelatine-water jellies or gels under normal atmospheric conditions, dry out, shrink, and harden. The drying out can be prevented by replacing a substantial amount of the water by a polyhydroxylic hydrophile substance such as glycerin. This relatively stable gelatine or glue-glycerin-water composition finds one of its technical uses in printers' rollers. In the past, however, these have always suffered from sensitivity to high humidities and temperatures.

It has been found that the addition of Commercial Grade Atlas Sorbitol to the composition confers greatly increased toughness and body, and resistance to undue moisture pick-up at high temperatures and humidities, without sacrificing desirable surface softness at low humidities.

Properly made sorbitol-glycerin-glue print rolls have consistently shown a life approximately three times that of the ordinary glue-glycerin roll. This longer life is due partly to the fact that sorbitol lowers the gel strength of glue mixtures to a lesser extent than does glycerin, and partly to the fact that sorbitol is much less soluble than glycerin in the organic solvents used in modern high-speed inks.

The greater gel strength of glues flexibilized with sorbitol is used to advantage in:

Cork binding	Gasket papers	Paper, cloth, and wood coating
Flexible glues	Fish glues	Textile size

Vegetable Adhesives

Vegetable adhesives, such as dextrins, starch pastes, and gums often used on envelopes, stamps or labels, demand perfect resistance to high humidities to prevent premature sticking. Also, the adhesive film must withstand long storage without checking or cracking. Pleasant taste and odor are frequently desirable. Sorbitol is being used as a vegetable adhesive plasticizer very satisfactorily.

Leather

It has been found that substantial savings and greater softness without developing surface tack can be effected by using sorbitol in the production of soft leathers. Sorbitol's stabilizing action against extremes of humidity is valuable in leather softening.

Cellulosic Products

Regenerated cellulose wrapping material, when softened with the non-volatile sorbitol can be subjected to high heat conditions without undergoing permanent loss of flexibility.

Sorbitol, when decomposed by heat, does not yield acrolein.

Many of the applications of sorbitol are still in early stages of development. However, indications are that the stabilizing humectant range of sorbitol may, in the near future, be applied to the following fields:

Plasticizers	Cast resinous products
Rubber products	Pharmaceuticals
Fur skins	Stabilizing white shoe polishes
Cosmetics	

Sulphosopes

Two new naphthenic soaps or, as they more truly are, mahogany sulfonates, recently developed by The Beacon Co., 89 Bickford St., Boston, Mass., are proving of unusual interest to the industry. The two types are known as "Sulphosope E" and "Sulphosope F."

These powerful emulsifying agents are among the lowest cost protective colloids available. They are entirely free from vegetable and animal fats and are so powerful that they will readily emulsify 15 times their own weight of oil and water to a stable emulsion. When the "Sulphosopes" are mixed with seven to eight parts of mineral oil, a soluble oil is formed, which emulsifies readily upon agitation with water. They possess the following properties:

Form—Very viscous fluid.
Color—Brown.
Specific Gravity—1.0 at 20° C.
Solubility—Completely dispersible in warm water, mineral oils, waxes, and alcohols.
Reaction—Slightly alkaline.
Composition—Sodium salts of sulfonic acids.

Uses: excellent for a general, very low-cost emulsifying agent; find particular use in cutting, soluble oils, textile and disinfectant emulsions.

Although they can, in many cases, be used interchangeab'y, "E" is suggested for fluid emulsions and "F" for viscous types.

Rayon Size

A water-soluble synthetic product, Rayon Size MW, designed especially for sizing viscose and acetate warps and the filling yarns of crepe fabrics is announced by du Pont. Being a purely synthetic material, built up by chemical reactions from simple chemical compounds of definite melting points and boiling points, it is reproducible from batch to batch, regardless of the climate, geographical location of its point of production, or other factors which greatly affect the uniformity of the sizes based on such natural products as gelatin and glue. It offers the advantages of absolute uniformity; stability on storage, either of the size itself or on yarns sized with it; capacity of being used without softening agents; effectiveness at low concentrations; and convenience of use.

Below, plant site in September, 1936, before building operations began.

New addition to American Viscose plant at Nitro, W. Va., nears completion. Photos were taken one year apart.

Surface Active Agents for Textiles*

NEW products for the treatment of textiles, known as Nacconol N and Nacconol NR, are the sodium sulfonates of synthetic compounds of fatty or oily character. They are chemically related to the soaps in as much as both possess a similar form of aliphatic structure with which useful emulsifying, wetting and detergent characteristics are recognized as being associated.

The soaps, however, through their character of soluble salts resulting from the combination of a strong alkali with a weak fatty acid, always display in solution a distinct alkaline reaction. Nacconols N and NR, on the contrary, can be considered as the ultimate reaction products of a strong acid with a strong alkali, which when compared with soaps display absolute neutrality. They do not hydrolyze like the soaps, but dissociate like sodium sulfate.

Calcium, magnesium and heavy metal soaps, in general, are insoluble and inefficient while the corresponding salts of the Nacconols N and NR are soluble and possess the properties of the alkali salts.

Outstanding is the resistance of these agents toward acids and alkalies, where they display a truly extraordinary stability. This property renders them of particular value where processing in acid media is required. They may be termed "Supersoaps" since, particularly in the presence of hard water or acids, they retain their detergent, wetting-out and foaming properties, together with excellent rinsibility and great resistance to oxidation.

Valuable Textile Assistants

Thus, they prove to be very valuable soap substitutes and assistants in textile processing and related industries as well as in many other industries and in household use where their unique advantages over soap are most desirable.

The two are chemically identical, but Nacconol N may be termed the technical product. It is light yellow in color and, therefore, recommended for use in those industrial operations where the color of the product is of little importance.

Nacconol NR is Nacconol N produced in a more refined form. It is white in color and, therefore, it may be used to advantage in all processings of materials of the highest quality. Its use is particularly recommended for the textile processing of fibers of animal origin because of its non-staining properties. It is superior to Nacconol N as a scouring agent for processing at higher temperatures.

General Properties

Nacconol N is manufactured as a fine flake having a light yellow color and Nacconol NR is a white flake. Both are readily soluble in soft water, hard water, and solutions of acid or alkali. Stock solutions of Nacconols N and NR as strong as 5 to 8 per cent. may be prepared. These are best prepared at an elevated temperature, 80 to 100° C., with constant agitation. When solution is complete, the liquor may be cooled to room temperature without crystallization.

The highly concentrated stock solutions are yellow to light brown in color but when diluted to washing concentrations of 0.05 to 0.5 per cent., the solutions are practically colorless, especially in the case of Nacconol NR.

Solubility of Nacconol N in Distilled Water

Conc. %	100° C. (212° F.)	50° C. (122° F.)	25° C. (77° F.)	15° C. (59° F.)
1	Clear	Clear	Clear	Clear
3	Clear	Clear with light flocculation	Clear with light flocculation	Clear with light flocculation
5	Clear	Clear with light flocculation	Slightly turbid light flocculation	Heavy turbidity
7	Clear with light flocculation	Clear with flocculation	Turbid with flocculation	Heavy turbidity with flocculation
9	Slightly turbid with light flocculation	Slightly turbid with flocculation	Turbid with flocculation	Heavy turbidity with flocculation
11	Slightly turbid with light flocculation	Turbid with flocculation	Heavy turbidity with flocculation	Heavy turbidity with flocculation
13	Slightly turbid with light flocculation	Turbid with flocculation	Heavy turbidity with flocculation	Heavy turbidity with flocculation
15	Turbid with flocculation	Heavy turbidity with flocculation	Heavy turbidity with flocculation	Heavy turbidity with flocculation

Solubility of Nacconol N in 10° Hard Water

Conc. %	100° C. (212° F.)	50° C. (122° F.)	25° C. (77° F.)	15° C. (59° F.)
1	Clear	Clear	Clear	Clear
3	Clear	Clear	Clear with light flocculation	Clear with light flocculation
5	Clear	Slightly turbid	Slightly turbid with light flocculation	Turbid with flocculation
7	Slightly turbid	Turbid with light flocculation	Turbid with light flocculation	Turbid with flocculation
9, 11 13, 15	Turbid with light flocculation	Heavy turbidity with flocculation	Heavy turbidity with flocculation	Heavy turbidity with flocculation

Solubilities of both in moderately alkaline solutions (pH - 11.0) approximate those given above for 10° hard water solutions.

Solubility of Nacconol N in 1 per cent. Acetic Acid

Conc. %	100° C. (212° F.)	50° C. (122° F.)	25° C. (77° F.)	15° C. (59° F.)
1	Clear	Clear	Clear	Clear
3	Clear	Clear	Clear	Clear
5	Clear	Clear	Slightly turbid	Heavy turbidity
7	Clear	Slightly turbid	Turbid with light flocculation	Heavy turbidity with flocculation
9	Clear	Slightly turbid with light flocculation	Turbid with flocculation	Heavy turbidity with flocculation
11	Clear	Turbid with flocculation	Heavy turbidity with flocculation	Heavy turbidity with flocculation
13	Clear with light flocculation	Turbid with flocculation	Heavy turbidity with flocculation	Heavy turbidity with flocculation
15	Slightly turbid with light flocculation	Turbid with flocculation	Heavy turbidity with flocculation	Heavy turbidity with flocculation

Solubility of Nacconol N in 0.5 per cent. Sulfuric Acid

Conc. %	100° C. (212° F.)	50° C. (122° F.)	25° C. (77° F.)	15° C. (59° F.)
1	Clear	Clear	Clear	Clear
3	Clear	Clear	Clear	Clear
5	Clear	Clear	Slightly turbid	Slightly turbid
7	Clear	Slightly turbid	Turbid with light flocculation	Turbid with heavy flocculation
9	Clear	Slightly turbid	Turbid with flocculation	Turbid with heavy flocculation
11	Clear	Turbid	Turbid with flocculation	Turbid with heavy flocculation
13	Clear	Turbid with flocculation	Heavy turbidity with flocculation	Turbid with heavy flocculation
15	Clear	Heavy turbidity with flocculation	Heavy turbidity with flocculation	Turbid with heavy flocculation

Nacconol NR is somewhat more soluble than Nacconol N but the difference in solubility is not large enough to require the presentation of an additional set of solubility tables.

Their metallic salts are soluble in the usual concentrations when these metals occur as impurities in the processing baths where they are used.

* Abstracted from *Dyestuffs*, Sept. 1937, p65, published by National Aniline.

Look

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You may rightfully ask, "What has the feminine gender to do with chemicals?" The answer is just this — whether you single out a stunningly dressed girl or gaze upon a skyscraper lording over the horizon you will find that Starkie products play an important part in bringing about such perfection.

Starkie refined oils, sulphonated oils and stabilizing mediums enter into the food you eat and the clothes you wear. Our synthetic binders and asbestos products are used in composition floors, walls and roofs of commercial and industrial buildings, as well as "a thousand and one" other uses.

Check our list of products; undoubtedly some of these can be used to advantage in your process.

STARKIE BINDER
A Pure Synthetic Pitch
ASPHALT
GILSONITE
VEGETABLE OILS
VEGETABLE AND ANIMAL FATTY ACIDS
NAPHTHENIC ACIDS
STEARIC ACID
ASBESTOS FIBRES
CAROB FLOUR
BENTONITE
DIATOMACEOUS EARTH

A. E. STARKIE COMPANY
1645 S. Kilbourn Avenue, Chicago, Ill.

STARKIE

The following table gives the solubilities of the common metallic salts of Nacconol N in neutral soft water.

Metallic Salt	Solubility at Boiling Temperature	Solubility at 30-32° C. (86-89.6° F.)
Aluminum	0.7%	0.41%
Barium	2.5	0.07
Cadmium	35.1	1.16
Calcium	7.0	0.34
Cobalt	44.3	2.23
Copper	41.7	1.74
Iron (Ferric)	Very Soluble	2 05
Lead	0.7	0.06
Magnesium	33.5	1.19
Nickel	36.2	0.63
Tin (Stannic)	Very Soluble	1.62
Tin (Stannous)	Very Soluble	8.43
Zinc	38.4	0.42

At any concentration in distilled water both will show pH values of from 6.9 to 7.1. They are practically neutral products.

Clear solutions of both may be prepared in extremely hard water at the concentrations used in normal textile and other processes. The calcium and magnesium salts of these compounds have both scouring and wetting properties, hence the products are very efficient in hard water. If soap is present with them in hard water, the lime soaps are satisfactorily dispersed and suspended so that they may be rinsed free. Fabrics washed or scoured with Nacconols never show greying or harshness due to lime soap deposits.

They are stable in strongly acid or strongly alkaline solutions, viz., 5 per cent. sulfuric acid or 5 per cent. caustic soda solutions. Under these conditions no break-down of the Nacconols N and NR occurs. Their solubility in strongly acid or alkaline solutions is slightly lower than in soft water but concentrations far in excess of regular washing concentrations may be obtained. Under these conditions they are efficient detergents, wetting agents, and surface tension depressants.

They do not oxidize to rancid products when not thoroughly rinsed from fabrics, and may also be used in oxidizing solutions such as hypochlorite or peroxide bleaching solutions used in textile and laundry processing, without breaking down.

The rinsibility of these products is such that they may be easily removed from any fabric or solid object with a minimum of rinsing. In this respect they are much easier to remove than soaps, which form non-rinsible lime soaps or hydrolyze in solution to form products which have a greater chemical affinity for animal fibers than the soap itself. When mixed with soap, the mixture also rinses out more easily than soap alone. This tends towards producing more uniform fabrics and reduced processing costs.

Both are powerful surface tension depressants even at extremely low concentrations. This property is not affected adversely by temperature, acid or alkali.

Nacconols N and NR both are powerful wetting-out agents. Of the two, the NR product is particularly effective.

These products do not produce the abundant foam that soaps do in soft water. In 0.1 per cent. solution Nacconol NR produces 83 per cent. of the foam that a similar concentration of high titre soap would produce. It has been definitely proved that for Nacconols the volume of foam is not an indication of the detergent efficiency. Actual plant trials have shown them to be more efficient detergents than products producing larger amounts of foam.

In contrast to soaps, they produce the same amount of foam in acid, or alkaline solutions or in hard water, as they do in neutral soft water.

Germicidal, fungicidal and bacteriostatic properties, either in dilute aqueous solutions or in oil emulsions as well as in powder form compounded with dry inorganic vehicles are displayed by both.

Stop Leak Compounds

By Charles F. Mason, Ph.D.

READILY accessible leaks in containers or connecting lines are usually repaired by replacing damaged parts, making tight joints with packing and gaskets or by luting with cements. However, in many cases the leak is not accessible, only the evidence; for example, odor when the circulated medium is a gas or a highly volatile liquid as in refrigeration and heating or lighting systems; moist parts and constant loss of valuable solutions and liquids.

A solution of synthetic resin in a solvent, whose freezing point is below that of the system, is injected in refrigeration systems and allowed to circulate; the principle being that when this solution finds its way into leaks, the solvent will evaporate and leave behind, mechanically imprisoned, the resin in the orifice. This resin will clog the leak, provided it is not soluble in the refrigerant near the temperature of freezing.

For such inaccessible leaks in systems where water is the circulated medium a set of compounds has been developed, and these will be described in succeeding chapters. The field for such compounds in systems of oils, acids, alkalies and chemicals in general has not been touched and, although they are possible, any contamination by stop leak compounds might render chemicals unfit for general use.

The injection of compounds in large oil systems has been practiced not for the purpose of stopping the leak but to detect its location. If the system is closed, a solution of rosin can be introduced, and after an interval of at least six hours samples can be removed and analyzed chemically for rosin content. Increasing contents of rosin at points far removed from the point of injection will indicate internal currents toward the leak and close inspection of the entire system is thereby avoided.

In steam boilers and automobile radiators the compounds about to be described serve a useful purpose either in stopping small leaks permanently, or retarding the flow into large ones, until it is convenient to take the equipment out of commission for mechanical repairs. Moreover, they are not appreciably affected by the accumulation of dissolved salts and hydrated metallic oxides usually present in such water.

They are compounded upon the principle of forming colloidal solutions in which are suspended finely divided metals or easily agglomerated minerals. The gelatinous nature of the solution aids in keeping the metals and minerals in suspension until some is carried mechanically into the leak and, by changing into a mass of increased volume by oxidation or aggregation, will stop the flow of water.

The principle of emulsification which has undergone rapid development in recent years is now being combined with the principle of colloidality, especially since the public demands that such compounds be sold in pellet, stick or cube form which are superior to powders and viscous liquids. As a result, some of the formulas contain soaps as emulsifying agents, and fats and oils as binders for the metals and minerals.

The early formulators depended upon the starch, gluten and water soluble gums present in vegetable products for the formation of a colloidal solution and, as a result, substances like ground linseed, oatmeal, flour, rye meal, flaxseed meal and bark extracts are numerous throughout the formulas. Very few were aware of the high bulking value of the water soluble gums which have been available for thirty years at nominal prices; some of which are arabic, karaya, guaiac, Irish moss and catechol or cutch.

"New opportunities for chemists—"

"New agents for conditioning—"

"New possibilities for products—"

"New ideas—"

"What does it all mean?"

"New terms in chemistry—"

What about this term, "HUMECTANT RANGE"

According to the dictionary—humectant means "affinity for water." A product with humectant qualities tends to take on moisture when the atmosphere is humid.

But humectant qualities vary widely. Some chemicals not only take on moisture under humid conditions, but tend to discharge moisture when the atmosphere becomes dry. Such chemicals therefore have a "wide humectant range" which sounds well, perhaps, but is unfavorable in that it indicates instability or a wide range of fluctuation in moisture content.

A narrow humectant range on the other hand, indicates stability of moisture content. Sorbitol, for example, is a moisture content stabilizer. This is to say—Sorbitol tends to take on moisture to a lesser degree at high humidities but, conversely, tends to lose less moisture at low humidities.

Now that Atlas Sorbitol is available in commercial quantities, the industrial chemist has opportunities to make use of this humectant stabilizing power to a degree of advantage hitherto impossible to attain. This is especially true in conditioning textiles, leathers, papers, glues or cellulosic products.

ATLAS
SORBITOL

Atlas Sorbitol — a hexahydric alcohol—is a logical scientific development that broadens the usefulness of conditioning agents.

The Atlas commercial grade has these outstanding properties:

HIGH VISCOSITY
NON-VOLATILITY
NARROW HUMECTANT RANGE

CHEMICALS ATLAS EXPLOSIVES

INDUSTRIAL CHEMICALS DEPARTMENT

ATLAS
POWDER COMPANY
Wilmington, Delaware

1. Iron filings	25.00
Ferrous sulfate	5.00
Rye meal	33.30
Graphite	16.70
Red lead	10.00
Asbestos powder	10.00
2. Graphite	47.00
Molasses	37.00
Phenol	0.50
Sodium bisulfate	0.50
Water	15.00
3. Asbestos powder	6.00
Dry paper pulp	7.00
Wheat paste	82.00
Salicylic acid	1.00
Gum arabic	2.00
Rosin	2.00
4. Flaxseed meal	70.00
Powdered aluminum	9.00
Sodium silicate dry	9.00
Casein	12.00
5. Linseed meal	80.00
Lampblack	3.00
Umber brown	3.00
Water	14.00
6. White lead	16.00
Lard	16.00
Tallow	18.00
Soap	30.00
Caustic soda	7.00
Linseed oil	7.00
Cinnamon	6.00
7. Powdered aluminum	12.00
Corn meal	50.00
Sodium carbonate	12.00
Soap	11.00
Sodium phosphate	15.00
8. Lampblack	6.00
Ground linseed	47.00
Oatmeal	23.00
Sodium carbonate	8.00
Flour	15.00
Camphor	1.00
9. Powdered aluminum	20.00
Nitrocellulose	20.00
Butyl acetate	20.00
Alcohol	40.00
10. Graphite	20.00
Tannin	40.00
Gum guaiac	10.00
Irish moss	10.00
Caustic soda	3.00
Cutch	7.00
Red oak bark extract	10.00
11. Flour	50.00
Lime	23.00
Sulfur	20.00
Gum arabic	7.00
12. Powdered aluminum	15.00
Flaxseed meal	50.00
Sulfur	20.00
Soap	15.00
13. Powdered aluminum	15.00
Sodium silicate dry	5.00
Flaxseed meal	60.00
Sodium phosphate	20.00
14. Powdered aluminum	15.00
Soap	17.00
Linseed meal	60.00
Ammonium carbonate	8.00
15. Powdered aluminum	12.00
Corn meal	60.00
Soap	18.00
Borax	10.00

Careful consideration of the above formulas shows that numbers 1, 4, 7, 8, 11, 12, 13, 14, and 15 can be compounded and sold in powder form, provided the soap chosen is in the form of chips or powder. Formula No. 6 is to be pressed into pellets, and formulas 2, 3, 5, 9, and 10 are liquid. The latter can safely be put up in galvanized iron containers as no corrosive substances are present.

A summary and examination of the water insoluble substances is interesting because these remain behind in the orifice to stop the leaks. They are iron filings, graphite, red lead, asbestos powder, paper pulp, rosin, aluminum, umber, white lead, lime, sulfur, and perhaps some silica deposited by sodium silicate. Only aluminum undergoes oxidation quickly. The remaining substances, with the exception of paper pulp, can be ground to a much finer state of division than either of the metals, and as a result could be carried into finer crevices. However, their action beyond this point in stopping a leak is unexplainable.

Resin for White Enamels

"Varcum 40-43," resin for use in white enamels, is being offered by Varcum Chemical Corp., Niagara Falls, N. Y. The feature of vehicles made from this resin is the economical formulation of white enamels for maximum resistance to alkali and boiling water. The enamels, on drying 48 hours, on metal, are said to withstand 5 per cent. caustic for three hours and boiling water for at least 15 minutes without discoloration, loss of gloss, or softening of the film.

Chrome Plating Rack Enamel

An enamel for insulating all but contact points of racks used in chrome plating has been developed by Maas and Waldstein, Newark, N. J. This Chrome Rack Enamel effectively insulates all parts of the rack that it covers, thereby preventing the dissipation of the current. It is applied by dipping the racks (with the contact points protected by tape) into the enamel, and is supplied in red and black.

Fertilizer Compound

Du Pont's Ammonia Dept. announces development of a new fertilizer compound which is said to be a distinct and valuable contribution of synthetic chemistry both to the fertilizer industry and agriculture. Compound, to be marketed under the trademark "Agramon," contains 42 per cent. urea nitrogen and is semi-granular. It has a distinctive dark color due to conditioning agents with which the individual particles are coated. These conditioning agents also contribute to the free flowing characteristics of the products. "Agramon" has an equivalent acidity of thirty-six lbs. of calcium carbonate per unit of nitrogen or 75.6 lbs. of calcium carbonate per 100 lbs.

One of its important uses is direct application in orchards and citrus groves. Its high analysis brings handling costs down to a minimum. The effect of residual salts, known to be harmful, is completely absent in "Agramon." It will produce the same high quality and yield in the field that are obtained when urea is used. It provides fertilizer with "efficient nitrogen," *i.e.*, nitrogen that is (1) completely available, (2) resistant to leaching, and (3) low in equivalent acidity.

Crush-proof Process

A crush-proof process, designed particularly for rayon pile fabrics of the transparent velvet type, is announced by du Pont's Rayon Dept., and is covered by U. S. P. 2,080,043. Tests have shown that transparent velvet treated by this process may be sat upon, or even walked upon, without injuring the appearance of the fabric. While the rayon pile is temporarily flattened, rapid recovery takes place as soon as the pressure is removed. The effect is particularly striking in damp weather when untreated velvets are crushed by even a moderate pressure. Although pile fabrics are not ordinarily washed with water, it is significant that transparent velvet treated by this process may actually be washed, without injury to the fabric or finish. While the pile is wetted by water, it assumes a normal upright position on drying.

AND SO HAVE WE...

the hosiery finisher's every need

BOIL-OFF OIL NO. 1 CONC. and Boil-off Oil S-609 (non-silicate)—used in our three-process (degumming, dyeing and finishing) method—afford more level dye shades and better penetration of the dyestuff at toe and heel seams. These oils also emulsify the silk gum, give a more rapid and thorough boil-off and assure greater tensile strength.

PENETRATOR W-888 is a very potent and almost instantaneous wetting-out agent.

MONOPOLE OIL imparts unsurpassed softness and handle to hosiery, produces well-penetrated dyeings, and serves as a good finishing agent.

WOLFCO SOLVENT, for scouring rayon or cotton, gives a good clean ground for dyeing light shades uniformly.

ELEMITE is effectively used for rayon or silk, where only hard water is available.

HOSIERY FINISH NO. 300 and Hosiery Finish B are finishing agents which give body and stiffness and make hose lie flat in box.

DELUSTRE W-716 delustres without stiffening and will not dust off.

SPLASHPROOF W-559—in a single bath—makes all fibres water shedding or water repellent.

STRIPPER Y and Hydrosulfite of Soda are special stripping agents for use on all fibres and particularly for stripping silk at low temperatures.

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SOLVENT NEWS

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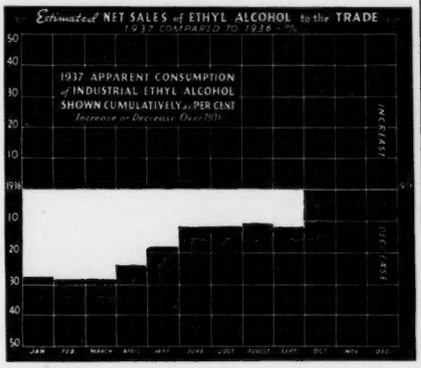
December ★ A Monthly Series of Articles for Chemists and Executives of the Solvent-Consuming Industries ★ 1937


Estimated NET SALES of ETHYL ALCOHOL to the TRADE
1937 COMPARED TO 1936 - %
1937 APPARENT CONSUMPTION of INDUSTRIAL ETHYL ALCOHOL SHOWN CUMULATIVELY in PER CENT
Increase or Decrease Over 1936
INCREASE
DECREASE
1936

Apparent consumption of industrial ethyl alcohol from Jan. 1 to Sept. 30, 1937, was 39,466,000 wine gallons. This is 11.5 per cent less than during the same period in 1936 when 44,579,000 wine gallons were consumed.

Claim Gelatin Improves Adhesion of Lacquers

PARIS, France—Production of cellulosic lacquers which have greater adhesion for paper, regenerated cellulose and materials which swell in water can be accomplished by incorporating in the lacquer a solid organic substance which is soluble in water but not soluble in the organic solvent of the composition, it is claimed in a patent granted here.

As an example, the patent papers suggest the following formula: nitrocellulose 60%, acetanilide 6%, benzoyl benzoic acid 10%, dibutyl phthalate 18%; 100-200 parts of this are dissolved in 100 parts of a solvent consisting of 16% butyl acetate, 10% ethyl acetate, and 74% toluene.

A second solution is prepared with 95% water and 5% gelatin. To 1,000 parts of the nitrocellulose solution are added gradually 3-7 parts of the gelatin solution, with vigorous stirring, until a dispersion of the aqueous gelatin is obtained.

More Cars Have Metallic Finishes At Auto Show

NEW YORK, N. Y.—While all of the glitter at the National Auto Show held here recently may not have been due to the metallic finishes on the cars, there was a noticeable increase in the use of this type of finish.

Many manufacturers of low-priced cars report so emphatic a demand for metallics that they will use them in every color with the exception of maroon, pale green and black. Although black continues to be the biggest seller, definite inroads on its position are being made by metallics, with brown and green securing a stronger foothold.

Last year SOLVENT NEWS reported body striping less in evidence. This year that trend is reversed to some extent. However, the decreased popularity of secondary colors, noted last year, was still more evident at this season's show.

Process Preserves Paper

Paper records can be permanently preserved at a very low cost, according to the inventor of a new chemical process for this purpose. Regardless of the age of the record, it is claimed that this process will strengthen the paper and maintain the legibility.

U.S.I. to Make Dry Ice in New Orleans

Erects New Plant To Solidify CO_2 From Alcohol Manufacture

NEW ORLEANS, La.—Manufacturing operations are now in full swing for the production of Dry Ice, the modern refrigerant that does not melt,* to supply New Orleans and the surrounding territory. Erected by the U. S. Industrial Alcohol Co. at Broadway and Coliseum St., the new Dry Ice plant is said to be the most up-to-date and compact unit of its type in the country.

Dry Ice is the trade name for solidified carbon dioxide—the gas resulting from fermentation of molasses in the manufacture of industrial ethyl alcohol.

In addition to its everyday use for the protection of frosted foods and ice creams, it finds an increasing market in industrial cooling equipment, special refrigerated freight cars and numerous chemical and scientific applications.

**Changes from a solid to a gas without passing through the liquid stage.*

100 U. S. I. Products at Chem. Show

NEW YORK, N. Y.—More than 100 products will be displayed by the U. S. Industrial Alcohol Co. and the U. S. Industrial Chemical Co., Inc., at the Exposition of Chemical Industries, Dec. 6-11. U. S. I. will occupy Booth 90 with Air Reduction Co. and affiliates.

Among the products to be shown by U. S. I. are important paint, varnish and lacquer solvents; dyestuff and pharmaceutical intermediates; and a group of unusual alcohol derived chemicals.

Diethyl Phthalate Solution Is Aid to Low-cost Blueprints

Process Makes Ordinary Paper Transparent For Blueprinting

BALTIMORE, Md.—U. S. I. Diethyl Phthalate, extensively used as a plasticizer for cellulose acetate and as a fixative in perfumes, will render ordinary paper sufficiently transparent for blueprinting, experiments at U. S. I. laboratories here have demonstrated. Any number of clean, distinct blueprints may be made from regular office records, sketches and similar material.

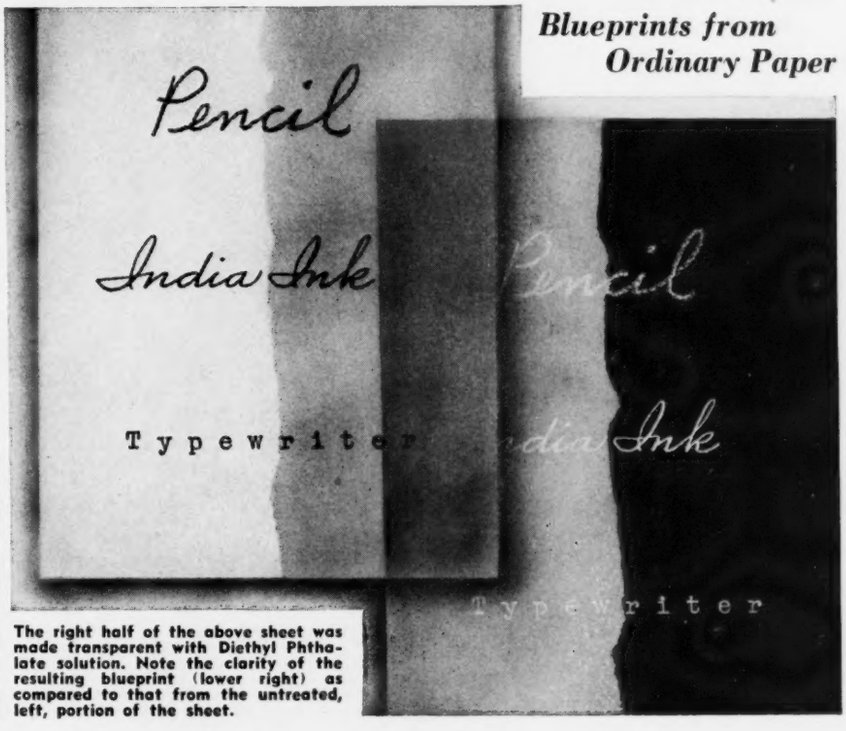
It was found that paper treated with 25% Diethyl Phthalate and 75% Solox (proprietary solvent of U. S. I.) became sufficiently transparent to transmit clearly the writing or drawing on it in the same manner as though the original writing had been made on tracing cloth.

Solox Solution Better

Preliminary tests were conducted with Diethyl Phthalate alone. While it proved possible to make blueprints from paper treated in this manner, further experiments showed a significant difference in favor of greater clarity when the Diethyl Phthalate-Solox solution was used in the proportion mentioned.

One important advantage of the method is its wide utlitity. Distinct prints can be produced from India ink, typewritten and even pencil originals. In general, however, India Ink yields the clearest copies. A comparison of the various prints is shown below.

(*Continued on next page*)



The right half of the above sheet was made transparent with Diethyl Phthalate solution. Note the clarity of the resulting blueprint (lower right) as compared to that from the untreated, left, portion of the sheet.

ADVERTISEMENT—*This entire page is a paid advertisement.*

DECEMBER ★ SOLVENT NEWS ★ 1937

More Uniform Plastics Needed For Aircraft Says Bureau of St'ds

WASHINGTON, D. C.—Experiments now being conducted to determine the suitability of plastics for aircraft windows demonstrate the need for more uniform materials, it was revealed in a recent issue of the *Journal of Research of the National Bureau of Standards.*

However, the results so far obtained are inconclusive, it was emphasized, because only three of the plastics—cellulose acetate, cellulose nitrate and acrylate resin—submitted by manufacturers were recommended for use on aircraft.

Acrylate Ranks High

Cellulose acetate was found to have excellent impact strength, bursting strength and flexibility, but was subject to warping and crazing after a year of weathering, the Bureau stated. Acrylate resin ranked high in transparency and scratch resistance, but was deficient in impact strength and flexibility, according to the Bureau.

No change was noted in a sample of cellulose acetobutyrate that had been exposed to the weather for 12 months.

Other transparent plastics, however, such as cellulose nitrate, ethyl cellulose, vinylchloride acetate and vinyl acetal failed in resistance to weathering after approximately three months, the Bureau points out.

Diethyl Phthalate Aid To Low-cost Blueprints

(*Continued from previous page*)

Of the ordinary methods for duplicating important records and memoranda, blueprinting is generally conceded to be the most economical. Compared with photostating, its cost is roughly half when single duplicates are to be prepared. For a larger number of copies this differential is even more striking so that, for example, the cost of a dozen blueprints is approximately one-third the cost of a corresponding number of photostats.

Engineers, chemists and superintendents may secure further information on this process by writing to the U. S. Industrial Chemical Co., Inc.

Paint Material Exports 24% Above 1936 Period

Exports of American paint materials during the first three-quarters of 1937 were valued at $16,320,000, a gain of 26 per cent over the same period in 1936, according to C. C. Concannon, Chief of the Commerce Department's Chemical Division.

Ready-mixed paints, varnishes and lacquers enjoyed the same per cent increase to reach a value of $6,193,600, the department reports.

Shipments of chemical pigments are said to have been especially heavy due to a better demand for carbon black. During the first nine months of this year 164 million pounds, valued at $8,743,500, were shipped as compared to 128 million pounds, $6,845,000, in the same months of 1936.

Fluorescence Is Newest Tool For Paint Analysis

CINCINNATI, Ohio—A new approach to the problem of rapidly identifying some of the more important raw raterials used in paints and lacquers is fluorescence analysis, delegates at the recent convention of the National Paint, Varnish and Lacquer Ass'n. were told.

This same method, it was pointed out, has already been used with success in the examination of food products, drugs and cosmetics, and the results of eight months' experiments with paint materials have emphasized that it may become increasingly useful.

It was reported that although solvents and plasticizers, exposed to light from a quartz-mercury lamp, fluoresce only slightly, or not at all, resins exhibit characteristic emissions which make it possible for an experienced observer to differentiate between them.

White pigments can be definitely identified, the experimenters declared. Additional tests, they stated, indicate that bodied oils can be differentiated from raw oils by their greater fluorescence, and that chinawood oil can be differentiated from perilla and linseed.

To permit safer blasting operations in mines while miners are at work, mechanical substitutes for blasting powders are being used. This was reported in a recent article which also states that one of the substitutes is compressed carbon dioxide, a by-product of alcohol manufacture.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

A heat-indicating ink changes from red to black when heated and back to red on cooling, according to the manufacturers. It is suggested that the ink be used for labels on parts not readily painted with heat-indicating paint. **(No. 41)**

U S I

A new wetting agent for water, said to be 5 to 10 times more efficient than other commonly used wetting agents, can be used in hard water or acid solutions where soaps are not effective, according to its manufacturer. Its application on wall paper is said to cause the paper to release its hold on a wall almost immediately. **(No. 42)**

U S I

Two new self-emulsifying waxes said to be particularly suitable for making bright-drying finishes, are reported to dry to hard, transparent, glossy and waterproof films. Emulsification is accomplished, according to the manufacturers, by simply melting the wax and adding boiling water with agitation. Shellac or special resins may be added, it is stated. **(No. 43)**

U S I

A binder for aluminum flake is reported to blend readily with common aluminum paint vehicles and to accelerate drying. Paints formulated with this binder, according to the manufacturer, will not skin in the open package and are exceptionally elastic and water-proof. **(No. 44)**

U S I

A new luminescent paint, said to be non-toxic, can be applied by brush or by air-gun, according to a recent announcement. It is claimed that this paint will glow in fhe dark for about twelve hours after it has been exposed to the light and, on being re-exposed for 20 to 30 seconds, will "re-charge." **(No. 45)**

U S I

A new valve (or faucet) for metal and glass containers is said to eliminate the need for a vent. The manufacturer states that the valve can cut a hole in a sealed metal can and be screwed in air-tight and leak-proof. **(No. 46)**

U S I

A paint primer for metal is reported to penetrate rust and make it chemically inert, expel moisture and prevent further rust. Paint or oil enamels may be applied over it, but not lacquers or synthetics, it is stated. **(No. 47)**

U S I

Special labels for difficult surfaces were announced recently. The manufacturer says they will stick to aluminum, to printed and to other unusual surfaces and no special moistening solution is required. **(No. 48)**

U S I

A new type of roll leaf for stamping and embossing, recently announced, is made on a web of transparent cellulose for flexibility and adaptability. According to the manufacturer it is available in gold-bronze, aluminum and pigment colors and is suitable for box tops, leather articles, wood handles, plastics, etc. **(No.49)**

U.S. INDUSTRIAL ALCOHOL CO.
INDUSTRIAL CHEMICAL CO., INC.

WORLD'S LARGEST PRODUCERS OF ALCOHOL DERIVED SOLVENTS

Executive Offices: 60 East 42nd Street, New York, N. Y. Branches in all Principal Cities

AMYL ALCOHOLS
Refined Amyl Alcohol
Refined Fusel Oil
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ETHYL ALCOHOLS
Specially Denatured
Completely Denatured
Anhydrous Denatured
Absolute—Pure
C.P. 96%—Pure and Denatured
Pure (190 Proof)—Taxpaid, Tax Free

*SOLOX—The General Solvent
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BUTYL ALCOHOLS
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95%, 97% and Pure
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ETHYL ETHER
U.S.P. and Absolute (A.C.S.)

COLLODIONS
U.S.P., U.S.P. Flexible and Photo
NITROCELLULOSE SOLUTIONS

DIAMYL PHTHALATE
DIBUTYL PHTHALATE
DIETHYL PHTHALATE
DIMETHYL PHTHALATE

ACETIC ETHER
AMYL ACETATES
High Test Commercial
Technical Secondary
BUTYL ACETATES
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DIETHYL CARBONATE

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ETHYL ACETOACETATE
SODIUM ETHYL OXALACETATE
PARACHLOR-O-NITRANILINE

ACETONE
DIBUTYL OXALATE
DIETHYL OXALATE
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POTASH BY-PRODUCTS

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A. S. T. M. Committee D-12 On Soaps Reports

Tentative Alkali Specifications Suggested as Standard—To Revise Tentative Definitions on Commercial Soaps and Soap Powders—Phenol in Marking Inks—Hanson-VanWinkle-Munning Appoints The Chamberlain Co., Southern California Distributor—News of the Specialties Field—

Considerable progress in the development of standard specifications and test methods was made at a series of meetings of the committee of the American Society for Testing Materials on Soaps and Detergents, D-12. Meetings were held in N. Y. City, Oct. 18 and 19. During '36 and '37 the committee developed 4 specifications for various types of soap and soap products, approved methods of sampling and chemical analysis and also definitions of terms. These were published in the '37 report of the committee and by action at the 40th Annual Meeting were accepted as ASTM tentative standards.

At its October meeting in New York, committee approved recommendations that the Tentative Specifications covering Caustic Soda (D 456—37 T), Modified Soda (Sesquicarbonate Type) (D 457—37 T), and Soda Ash (D 458—37 T) be referred to the Society for adoption as standard. Also the committee decided to recommend that the Proposed Methods of Sampling and Chemical Analysis of Soaps and Soap Products be referred to letter ballot for adoption as standard. These recommendations will be included in the committee's '38 report.

New standardized test methods for the determination of potash and for the size of soap particles were approved at the meeting and will be proposed for publication as tentative. In its current report the committee published for information extensive Methods of Chemical Analysis of Sulfonated Oils and these together with proposed specifications for white floating soap, which were discussed, are to be submitted to the Society as proposed new standards.

Existing tentative definitions covering commercial soap and soap powder are to be revised—these were referred back to the subcommittee for further study. A number of new tentative definitions of terms were reviewed at the meeting and were approved.

In considering its program of work for the future, the committee decided to concentrate on the preparation of specifications for industrial soaps, soap powder and built soaps and also the development of standard methods for determining carbon dioxide and iodine value of fats.

Copies of the '37 Report of Committee D-12 will be sent by the American Society of Testing Materials, 260 S. Broad st., Philadelphia, at a charge of 35c each.

Officers of the Committee are:—H. P. Trevithick, chief chemist, N. Y. Produce Exchange, chairman; F. W. Smither, chemist, National Bureau of Standards; and B. S. Van Zile, chemist, Colgate-Palmolive-Peet.

Labeling Marking Inks

The Food and Drug Administration, in the enforcement of the Federal Poison Act, has recently encountered on the market indelible marking inks containing phenol (carbolic acid). The phenol content of the samples examined ranged from 6.6% to 52% by weight.

The Caustic Poison Act provides that carbolic acid (C_6H_5OH), otherwise known as phenol, or any preparation containing the substance in a concentration of 5% or more, when marketed in containers suitable for household use, is misbranded unless the container bears a conspicuous, easily legible label or sticker containing:

(1) The common name of the substance;

(2) The name and place of business of the manufacturer, packer, seller or distributor;

(3) The word "poison" running parallel with the main body of reading matter on the label or sticker, on a clear, plain background of a distinctly contrasting color, in uncondensed gothic capital letters, the letters to be not less than twenty-four point size unless there is on the label or sticker no other type so large, in which event the type shall be not smaller than the largest type on the label or sticker; and

(4) Directions for treatment in case of accidental personal injury by any dangerous caustic or corrosive substance, except that such directions need not appear on labels or stickers, on parcels, packages, or containers at the time of shipment or of delivery for shipment by manufacturers and wholesalers for other than household use.

Preparations containing carbolic acid are subject to the law when shipped, or delivered for shipment, in interstate or foreign commerce, or sold, or offered for sale, or held for sale or exchange, in any territory or possession of the United States or in the District of Columbia, or offered for importation into the United States.

The expression "containers suitable for household use" is not to be construed as restricting the application of the law to articles intended solely for use in the home. Protection of the home is, of course, the primary purpose of the statute, but that Congress did not have in mind the limitation of the act to products for use in the household only is indicated by the exemption in the fourth labeling requirement as above set forth.

Copies of Law Obtainable

Copies of the law and regulations and a list of suitable antidotes can be obtained by addressing the Food and Drug Administration, Washington, D. C., and requesting copies of SRA-CP Nos. 1 and 2.

In addition to carbolic acid, the law applies to 11 other caustic or corrosive substances, some of which may enter into the composition of the various kinds of inks and stamping materials. These substances with the minimum percentages which bring the articles containing them within the scope of the act are as follows:

Hydrochloric acid (HCl)	10% or more
Sulfuric acid (H_2SO_4)	10% or more
Nitric acid (HNO_3)	5% or more
Oxalic acid ($H_2C_2O_4$)	10% or more
Any salt of oxalic acid	10% or more
Acetic acid ($HC_2H_3O_2$)	20% or more
Hypochlorous acid or its salts (except chlorinated lime) to yield available chlorine	10% or more
Potassium hydroxide (KOH)	10% or more
Sodium hydroxide (NaOH)	10% or more
Silver nitrate ($AgNO_3$)	5% or more
Ammonia water (NH_3)	5% or more

The shipment within the jurisdiction of the Caustic Poison Act of products subject to it without the labeling prescribed by the statute, renders the shipper liable to criminal prosecution and the goods to seizure.

Trade Commission Rulings

Camel, Lead, Color and Chemical Products Mfg. Corp., 33 Keap st., Brooklyn, selling Germ-Proof Film Paint, stipulates that it will stop advertising its product as being capable of constantly killing all germs, unless this assertion is qualified by the statement that it kills certain specified germs coming in contact with germ-proof paint.

U. S. Kalsomine, 50 Church st., N. Y. City, in the sale of Fenolite wall paint, agrees to stop advertising that its product is a germicide or has germicidal qualities, and to cease using the word "germicidal" alone or in connection with other words so as to imply that its product will kill germs, when such is not a fact.

Misleading representations in the interstate sale of a repairing liquid will be discontinued, under a stipulation entered into with the Commission by Perfect Manufacturing Co., 3317 Madison Rd., Cincinnati, trading as Metalfix Co. In the sale of its product, Metalfix, respondent agrees to stop advertising that the preparation will weld; that it will effect permanent repairs under all conditions, and that it is not a cement, but a metallic liquid and a new chemical discovery.

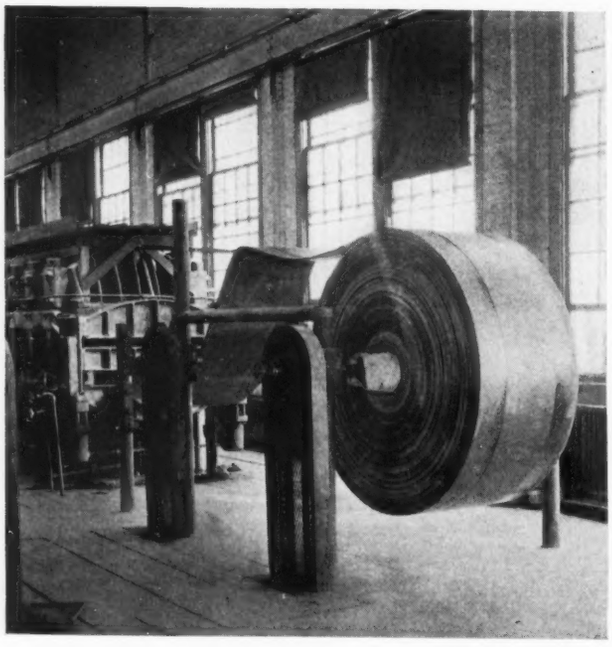
Mercready is Author

Herbert V. Mercready, advertising manager for Magnus Chemical, Garwood, N. J., is the author of an article "Making Sales Letters Pay," appearing in the November issue of *Industrial Marketing*.

SULPHUR AND RUBBER

WHEN Charles Goodyear accidentally dropped some India rubber mixed with Sulphur on a hot stove, he started something! The huge rubber industry as we know it today—belting, tires, hose and hard rubber products—all developed from that little accident. Later, chemists discovered the reason why Sulphur helped so much. It is an indispensable product, even though the percentage required is not always high.

The story of rubber emphasizes the part Sulphur plays in industry. Sulphur, the converter, in one form or another changes many raw materials into basic useful products. Sulphur is indeed one of the "keystones" of today's chemical engineering.



Rubber conveyor belt coming out of a vulcanizing press.

Photo, courtesy of
The Goodyear Tire & Rubber Co., Inc.

Texas Gulf Sulphur maintains a steady production of more than 3000 tons daily of 99½% pure Sulphur. Ample stocks are available at the mines and shipping point—Galveston—to take care of cargo or carload orders.

TEXAS GULF SULPHUR CO.
75 E. 45th Street New York City
Mines: Newgulf and Long Point, Texas

Hanson-VanWinkle Appoints

Hanson-VanWinkle-Munning Co., Matawan, N. J. and Anderson, Ind., appoints The Chamberlain Co., 2550 E. Olympic blvd., Los Angeles, distributor in southern California. The Chamberlain Co. is carrying a complete stock of supplies for the plating industry. Hanson-VanWinkle-Munning is the oldest firm in the metal finishing equipment and supply industry while Chamberlain was established in 1898 and has since been in business continuously. Jack D. Clayton, formerly representing Hanson-Van-Winkle-Munning in Detroit, is acting as sales representative for Chamberlain's Plating Supplies Division, in southern California.

Safro Heads Economic Entomologists

The ninth annual meeting of the Eastern Branch of the American Association of Economic Entomologists was held Nov. 18 and 19 at The Walton Hotel, Philadelphia, with over a hundred in attendance. H. N. Worthley, Chairman, presided. Forty-five papers were submitted covering the research developments as to sprays and other chemicals in the control of many pests including Japanese beetles, codling moths, spiders, leafhoppers, corn ear worms, and orchid weevils. Pest Control operators might find of especial interest the following two papers: "Absorption of Hydrocyanic Acid by Different Types of Insects" by E. L. Carpenter and William Moore, and "Life History of the Black Carpet Beetle" by Dr. E. A. Back.

Officers for the coming year are: V. I. Safro, Chairman; C. C. Hamilton, Vice-chairman, and H. B. Weiss, secretary-treasurer. It was voted to present a cup to the individual whose paper was acclaimed to be the best at the annual meeting to be held in 1938 in Baltimore, Md.

Exterminators Elect Stockel

A new all-time attendance record was made at the recent Memphis meeting of the National Pest Control Association, the new name for the National Association of Exterminators and Fumigators. New officers of the group are: H. K. Stockel of Tornado Manufacturing Co., Columbus, Ohio, as president; new vice-presidents, Walter S. McCloud, W. B. McCloud & Co., Chicago, Otto Orkin, Orkin Exterminating Co., Atlanta, Irving Sameth, Sameth Exterminating Co., N. Y. City, L. A. McKenna, A. C. Exterminating Co., Cleveland, and G. R. Lovejoy, Western Exterminating Co., Los Angeles. William O. Buettner, Oscar G. Buettner & Son, Brooklyn, continues as secretary, and A. M. Akers, Rose Co., Cleveland, is treasurer.

Adopt New Official Seal

Adoption of its present name by the National Pest Control Association crystallized action on a new official seal, for which there was already a growing sentiment.

A study was launched. Suggestions, some in the form of completed drawings, were contributed by 46 member firms. Hundreds of standard and re-designed trade-marks and seals were examined. With counsel of an eminent authority, ideas from many sources were reduced to terms of design. Twelve ink sketches were prepared to help visualize results; from these, one was eventually selected as basis for the new seal.

N. Y. Exterminators Meet

Details of the meeting of the Associated Exterminators & Fumigators of N. Y., held Nov. 30 at the Association headquarters, 7 W. 44th st., N. Y. City, will have been received too late to include with this issue. President Buettner stated in advance that the meeting would largely concern itself with a discussion of a "Liquidated Damage Agreement" having to do with Fair Trade Practice Rules.

In New Positions

H. J. Waldron, formerly associated with leading textile houses in New England, and Southern states, is now the New England district sales manager for National Oil Products. Mr. Waldron was also at one time connected with E. F. Houghton & Co.

Walter R. Surgeon is now associated with Hilo Varnish, Brooklyn, heading the ink vehicle department of the company.

With the Specialty Companies

Warwick Chemical Co., West Warwick, R. I., purchases a plant at Rock Hill, S. C., and will manufacture textile chemical specialties. M. M. McCann, who for the past 2 years has been Southern representative for Warwick, will be plant superintendent and operations will start early in '38.

Johnson-March Corp., West Frankfort, Ill., ships the first tankcar of "Coalaid," a product designed to treat coal to prevent dusting. Dr. Werner K. Kleinicke is chief chemist of the company.

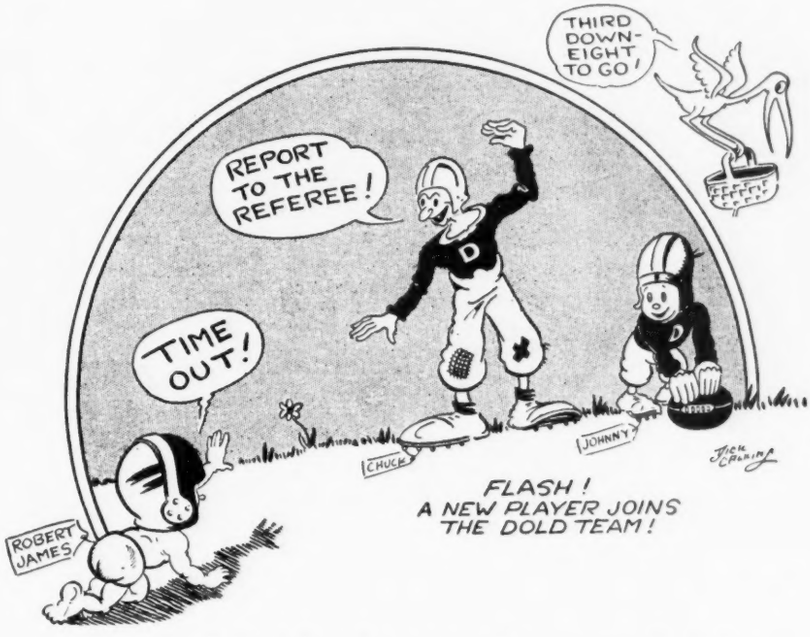
Arthur A. Lehmann & Co., N. Y. City, opens a warehouse in Gloversville, N. Y., for a complete line of chemicals for the textile and leather industries. Alderman Oscar Hine is the branch manager: address, 189 W. Fulton st.

Parsons Ammonia Co., one of the largest household ammonia companies, now in Brooklyn, leases the empty Andrew McLean & Co. mills in Passaic, N. J., and will center its eastern quarters there.

Winwar & Sons, Inc., leases additional space at the Everett Mill Properties at Lawrence, Mass. Company produces soap, specialties, and jobs chemicals.

Harry Safran forms the Safran Chemical & Supply Co., Lynn, Mass., to make a general line of chemical specialties for shoe manufacturers.

S. Schwabacher & Co., 25 Beaver st., N. Y. City, are distributing reprints of an article "Naphthenic Soap Emulsions" which appeared in a recent issue of *Soap*. A number of industrial applications of mineral oil residues as emulsifying and bodying agents are discussed. Copies are available by writing to the company.



C. Norman Dold, of Rose Exterminator Co., announces the birth of his third son.

DU PONT
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CHLORINATED HYDROCARBONS

THE properties of these products have made them exceedingly useful for a wide variety of industrial uses. At ordinary temperatures, most of these chlorinated hydrocarbons are liquids. A few are gases, shipped commercially in cylinders. One (Hexachlorethane) is a solid. They are non-flammable and non-explosive, with the exception of a few which are rated only moderately flammable.

The liquid products are powerful, rapid, selective solvents for a large number of organic materials such as fats, waxes and oils, and in some cases for free alkaloids. Some are now widely used in dry-cleaning, metal degreasing, extraction and other industrial work because of the easy and economical recovery of solvent from extracted residues by simple distillation.

The gases and some of the low-boiling liquids are popular refrigerants, in successful use for a number of years in household and commercial units.

The technical bulletin, "Du Pont Chlorinated Hydrocarbons," gives concise information about these products—what they are, where they are used—and other data which are useful in selecting the proper one for a specific purpose. Copies free on request.

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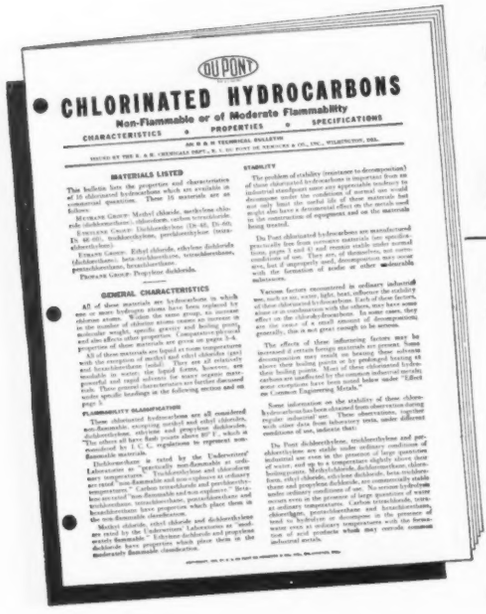
R. & H. CHEMICALS DEPT.

E. I. DU PONT DE NEMOURS & CO., INC.

WILMINGTON, DELAWARE


DU PONT

CHLORINATED HYDROCARBONS

Non-Flammable or of Moderate Flammability

CHARACTERISTICS • PROPERTIES • SPECIFICATIONS

MATERIALS LISTED

GENERAL CHARACTERISTICS

FLAMMABILITY CLASSIFICATION

STABILITY

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E. I. DU PONT DE NEMOURS & CO., INC.
R. & H. Chemicals Dept., Wilmington, Delaware

Please send ..... copies of the new technical bulletin listing properties and characteristics of the 16 Chlorinated Hydrocarbons in industrial use.

Name_____

Company_____ Position_____

Address_____ City_____ State_____

Chemical Specialty Patents

Manufacture hard-surfaced, flexible floor covering, using plastic substance in process. No. 2,095,246. James E. Graham, Needham, and Edwin M. Lines, Dedham, Mass., to Bird & Son, Inc., East Walpole, Mass.

Soldering flux comprising reaction product of triethanolamine with an acid from the group of salicylic, benzoic and phosphoric. No. 2,095,335. Harry C. Kofke, assignor to Frank D. McBride, trading as American Solder & Flux Co., both of Phila., Pa.

Insecticidal phosphate fertilizer; comprising unspent humus, bone meal, dry blood, and copper sulfate. No. 2,095,366. Sisto E. Marsico, Aspinwall, Pa.

Condensation products suitable as assistants in textile and related industries, comprising carboxylic amides derived from polycarboxylic compounds. No. 2,095,457. Adolf Steindorff, Gerhard Balle, and Paul Heimke to I. G., all of Frankfort-am-Main, Germany.

Production insecticide in form of free-flowing sodium fluoride. No. 2,095,464. Nelson A. Chesnutt, Jr., Springfield, Pa., to General Chemical Co., New York City.

Manufacture naphthenates in form of driers. No. 2,095,508. Friedrich Meidert, Frankfort-am-Main-Griesheim, Germany, to I. G., Frankfort-am-Main, Germany.

Liquid lubricating oil composition; mixture of a petroleum lubricating oil, calcium phenyl stearate, and stearic acid. No. 2,095,538. Arnold C. Vobach, Whiting, Ind., to Sinclair Refining Co., New York City.

Non-setting cement comprising tallow, mineral oil, aluminum oleate, rosin oil, and inert filling material. No. 2,095,614. Silvio Pellerano, Brooklyn, N. Y.

Production assistants in the textile and related industries, reacting lauric aldehyde with ethylene diamine and acting on resulting product with ethylene oxide. No. 2,095,814. Heinrich Hopff and Willi Schmidt, Ludwigshafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Method preparing from dried pieces of casein, caseinate solutions suitable for use in adhesives, using water and ammonia in process. No. 2,095,887. Wm. Howard Nicol, Cuyahoga Falls, O., to Wingfoot Corp., Wilmington, Del.

Age resister for rubber. No. 2,095,921. Albert M. Clifford, Stow, O., to Wingfoot Corp., Wilmington, Del.

Production insecticide comprising compound containing homocyclic nuclei joined by one azo group, and containing at least one halogen atom in addition to at least one hydroxyl group. No. 2,095,939. Donald L. Vivian and Herbert L. J. Haller, Washington, D.C., to free use of the Public in the territory of the U. S. A.

Insecticide containing an arylazo compound in which the nuclei are substituted by at least one halogen atom. No. 2,095,940. Donald L. Vivian and Herbert L. J. Haller, Washington, D.C., to free use of the Public in the territory of the U. S. A.

Insecticide comprising compound containing homocyclic nuclei joined by one azo group, and containing in addition to not less than one hydroxyl group, not less than one halogen atom and one alkyl group. No. 2,095,941. Donald L. Vivian and Herbert L. J. Haller, Washington, D.C., to free use of the Public in the territory of the U. S. A.

Aqueous emulsion of water and a reaction compound consisting of an ester of a polyhydric alcohol and a higher fatty acid and a buffer consisting of a mixture from the group of soluble borates and boric acid, monosodium and disodium phosphates. No. 2,095,955. Harry Bennett, Brooklyn, N. Y., and Felix Braude, Bronx, New York City, Braude assignor to Bennett.

Production a dense, non-porous, vitreous, strong, pseudo non-crystalline refractory body of finely divided magnesia, first admixing magnesium oxide and a slightly acid oxide. No. 2,095,982. John Allen Heany to Edw. J. Brennan, both of New Haven, Conn.

Superphosphate fertilizer containing manganese as an essential element in form of an available manganese phosphate. No. 2,095,993. Walter H. MacIntire, Knoxville, Tenn.

Acid-resisting vitreous enamels; suspension including water saturated with CO_2. No. 2,096,030. Raymond D. Cooke, Wauwatosa, Wis., to Rundle Mfg. Co., Milwaukee, Wis.

Manufacture enamel paints. No. 2,096,095. Geo. E. Finn to Sherwin-Williams Co., both of Cleveland, O.

Production adhesive; using viscous chlorinated diphenyl, solid chlorinated diphenyl, and paracoumarone-indene resin. No. 2,096,110. Harvey G. Kittredge, Dayton, and Sylvester J. Broderick, Yellow Springs, O., to Foilfilm, Inc., Dayton, O.

Manufacture soap and recovery unsaponifiable ingredients including glycerin, alcohols, gases, water vapors, and other impurities. No. 2,096,188. Henry W. F. Lorenz, Jersey City, N. J., and Frederick W. Brown, New York City; 33 1/3% to Lorenz, 33 1/3% to Theodore M. Sewards, and 33 1/3% to Chas. H. Wilson, both of New York City.

Coated base material adapted for exposure to weather, comprising a base and a hardened weather layer of a high alumina cement free of lime. No. 2,096,242. Norman P. Harshberger, Scarsdale, N.Y., to Bakelite Building Products Co., Inc., New York City.

Production insulating material; adding a fermentation-producing agent to an aqueous intimate dispersion of a bituminous material in clay to effect an aeration of material. No. 2,096,398. Geo. R. Hoover and Mildred McKim Hoover, Middletown, O.

Insecticide. No. 2,096,414. Donald L. Vivian and Herbert L. J. Haller, Washington, D. C., to the free use of the Public in the territory of the U. S. A.

Electrical cable lacquer composed of nitrocellulose, tricresyl phosphate, mineral oil, ethyl acetate, alcohol, and toluol. No. 2,096,448. Percy Morgan Clark, Parlin, N. J., to du Pont, Wilmington, Del.

Cutting and drawing oil base, comprising a light-bodied, light-colored, low viscosity sulfur oil, containing alkyl sulfides. No. 2,096,449. Geo. W. Cupit, Jr., Woodside, N. Y., to General Chemical Co., New York City.

Stable glue preparation in dry solid form for production of an adhesive capable of being hardened; mixture of a dry, solid, non-hardenable urea-formaldehyde resin, an acidic hardening-promoting agent, and a formaldehyde-yielding compound. No. 2,096,521. Wilhelm Kraus and Willi Fisch to Society of Chemical Industry in Basle, all of Basel, Switzerland.

Stomach poison for insects containing aqueous suspension of reaction product of neutralized nicotine and neutralized bentonite. No. 2,096,566. Claude R. Smith, Washington, D. C., to free use of the Public in the U. S. A.

Production adhesive; sheet coating containing rubber hydrochloride, a chlorinated paraffin, and a paracoumarone-indene resin of tacky, adhesive character. No. 2,096,660. Herbert A. Winkelmann, Chicago, Ill., to Marbon Corp., corp. of Del.

Plastic, dough-like, adhesive composition, comprising a filler of wood flour, and a clay, also a binder for filler, comprising casein reduced with water and rendered non-putrefactive with a preservative agent. No. 2,096,684. Carl W. Neufeld to Perfect Mfg. Co., both of Cincinnati, O.

Process temporarily softening and lubricating textile fibers, by impregnation with a liquid solution comprising a water-soluble soap and an organic solvent. No. 2,096,705. Howard Heckethorn, Oswego, N. Y., one-third to Warren K. Cooley, Silver Spring, Md., and one-third to Edward M. Schenke, Chevy Chase, Md.

Preparation dihydrojasmone, by hydrogenating an extract of pyrethrum flowers in presence of a catalyst. No. 2,096,715. Herbert L. J. Haller, Washington, D. C., and Frederick B. La Forge, Arlington, Va.

Gradually available fertilizer, formed from urea and aldehyde. No. 2,096,742. Wm. J. Hale to Dow Chemical Co., both of Midland, Mich.

Manufacture showerproof fabrics; immersing fabric in aqueous dispersion containing rubber and a solid water repellent material. No. 2,096,753. Edward Arthur Murphy and Evelyn Wm. Madge, Wylde Green, Birmingham, England, to Dunlop Rubber Co., Ltd., London, England.

Light colored tung oil varnish which is transparent in thin films, composed of cooked tung oil and a phenolic-acetaldehyde resin. No. 2,096,764. John B. Rust, Orange, N. J., to Ellis-Foster Co., Montclair, N. J.

Bituminous composition having tensile strength higher than that of the bitumen, composed of ground mica, ground slate, and bituminous material. No. 2,096,876. Chas. J. Bitzer, Brooklyn, N. Y., to Standard Oil Development Co., corp of Del.

Insecticidal composition having a mineral oil as an active ingredient. No. 2,096,885. Theodore R. Donlan, Irvington, N.J., to Stanco, Inc.

Process saturating fibrous conduits. No. 2,096,888. George Emberg, Chicago, Ill., to Barrett Co., New York City.

Preparation mineral oil solution of derris, using a volatile organic liquid and adsorptive clay in process. No. 2,096,922. Nicholas A. Sankowsky, Scotch Plains, N. J., to Stanco, Inc.

Insecticidal oil spray comprising a petroleum oil in combination with cetyl alcohol. No. 2,096,947. Vanderveer Voorhees, Hammond, Ind., to Standard Oil Co., Chicago, Ill.

Soluble oil for use in dilute aqueous dispersions as a lubricating and cooling agent in cutting or threading operations involving presence of ferrous metal in the work. No. 2,097,085. Frederick W. Fabian, East Lansing, Mich., and Elmer Wade Adams, Hammond, Ind., to Standard Oil Co., Chicago, Ill.

Manufacture cork coated fabric to imitate leather. No. 2,097,089. Howard L. Munroe, Malden, Mass.

Flux for galvanizing. No. 2,097,194. Raymond J. Kepfer, Lakewood, O., to du Pont, Wilmington, Del.

Production crystalline alumina in large discrete particles. No. 20,547. Reissue. Raymond R. Ridgway, Niagara Falls, N. Y., to Norton Co., Worcester, Mass.

Tabbing composition for paper and book-binding which will remain flexible for several months, which contains uncoagulated, unvulcanized rubber latex. No. 2,097,212. Leon J. Healy, Milwaukee, Wis., to Lee Hardware Co., Salina, Kans.

Preparation liquid glue free from an excessive amount of foam, using foam-abating salt. No. 2,097,239. Lawrence Bradshaw, Bainbridge, N. Y.

Purification mahogany soap obtained in neutralization of acid treated oil and containing inorganic impurities. No. 2,097,440. Manuel Blumer, Butler, Pa., to L. Sonneborn Sons, Inc., corp. of Del.

Manufacture phosphate-sulfur fertilizer. No. 2,097,446. John T. Claiborne, Jr., New York City, and Paul D. Peterson, New Brunswick, N. J., to Freeport Sulphur Co., New York City.

Manufacture nitrogenous fertilizer. No. 2,097,457. Ernest F. Grether to Dow Chemical Co., both of Midland, Mich.

Fire extinguishing material. No. 2,097,486. John A. Henricks, Jr., Chicago, Ill., to du Pont, Wilmington, Del.

Fireproofing vegetable materials; subjecting same to action of a solution of an ammonium salt and urea. No. 2,097,509. Ernest R. Boller, Euclid, O., to du Pont, Wilmington, Del.

Ammunition priming composition containing a silver salt of styphnic acid. No. 2,097,510. Willi Brun, Stratford, Conn., to Remington Arms Co., Inc., corp. of Del.

Inhibitor comprising product produced by mixing a cinchona bark alkaloid, sulfur, and sulfuric acid, and heating to cause chemical interaction. No. 2,097,512. Fred C. Carlson, Lakewood, O., to du Pont, Wilmington, Del.

Cyanide-cadmium plating composition containing a hydrogenated amketaldoresin. No. 2,097,630. Geo. Lutz, Rocky River, O., to du Pont, Wilmington, Del.

Production porous silica gel; forming a silicic acid hydrogel having particles of precipitated sulfur uniformly dispersed therein. No. 2,097,634. Jacques Malan and George Gordon Hannington Malan, Somerset West, Union of So. Africa, to Imperial Chemical Industries, Ltd., corp. of Great Britain.

Composition for boiler water treatment, consisting of trisodium phosphate, soda ash, and starch. No. 2,097,649. Thorvald A. Solberg, U. S. Navy.

Manufacture polishing article; using finely divided polishing powder and a finely powdered solid fusible resin. No. 2,097,654. Chas. E. Wooddell to Carborundum Co., both of Niagara Falls, N. Y.

Clear, detergent liquid composition; being mixture of an alkali metal soap and a detergent; pine oil and water. No. 2,097,737. Oscar A. Pickett and Arthur L. Osterhof to Hercules Powder Co., all of Wilmington, Del.

Preparation emulsions of oil and moisture. No. 2,098,010. Roy C. Newton, Walter F. Bollens and Leo C. Brown to Industrial Patents Corp., all of Chicago, Ill.

Friction material, comprising hard, dense mass of asbestos fibers, and an organic binder. No. 2,098,078. Wm. L. White, Clifton, N. J., to Raybestos-Manhattan, Inc., Passaic, N. J.

Synthetic resin adhesive; embodying a zinc chloride-urea-formaldehyde condensation product and a sizing adhesive agent. No. 2,098,083. Albert Henry Bowen and Theo. Williams Dike to I. F. Laucks, Inc., all of Seattle, Wash.

Composition for destroying suckers in tobacco and tomato plants; consisting of lubricating, linseed and creosote oils, gasoline, and fuel oil. No. 2,098,135. Carl Onasorg Daughety, Ayden, N. C., to Carolina Chemical Co.

Adhesive material highly resistant to aging, containing rubber and a plasticizer. No. 2,098,187. Milton H. Kemp, Oak Park, Ill., to Kendall Co., Boston, Mass.

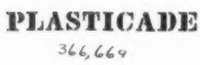
Cement or binder; mixture of paraffin wax, rosin, rubber and petrolatum. No. 2,098,221. Philip S. Barnhart, Westfield, Mass., to Westfield River Paper Co., Russell, Mass.

Cement or bonding material having as ingredients wax, rosin, rubber, and petrolatum. No. 2,098,222. Philip S. Barnhart, Westfield, Mass., to Westfield River Paper Co., Russell, Mass.

Laminated paper sheet; sheets of glassine paper united by binder composed of paraffin wax, rosin, rubber, and petrolatum. No. 2,098,223. Philip S. Barnhart, Westfield, Mass., to Westfield River Paper Co., Russell, Mass.

Patents digested include issues of the "Patent Gazette," October 12 through November 9, inclusive.

363,229



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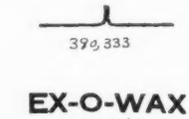

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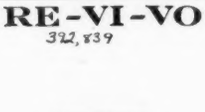

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363,229. Pad-Y-Wax Co., Inc., New York City; Mar. 30, '35; wax bearing waxing pads; use since Apr. 5, '34.

366,669. Mead Paperboard Corp., Wilmington, Del., assignor to Mead Corp., Chillicothe, O.; June 26, '35; chemical material for use with clay in manufacture of brick, pottery, etc., to improve strength and other qualities thereof; use since Feb. 21, '35.

376,581. Harmar Sales Corp., New York City; Mar. 30, '36; brushless liquid compound which when applied to wood, metal, leather and rubber surfaces, produces a smooth, lustrous, and transparent finish; use since Feb. 10, '36.

380,112. Lewy Chemical Co., New York City; June 23, '36; insecticides; use since Nov. 8, '27 for entire mark; since Oct., '94 for words "Moth Gas."

380,113. Lewy Chemical Co., New York City; June 23, '36; insecticides; use since Jan. 15, '31 for entire mark; since Oct., '94 for words "Moth Gas."

380,114. Lewy Chemical Co., New York City; June 23, '36; insecticides; use since Nov. 8, '27 for entire mark; since Oct., '94, for words "Moth Gas."

381,095. R. M. Hollingshead Corp., Camden, N. J.; July 16, '36; japan iron-enamel, touch-up enamel for automobiles, paint, varnish, liquid tire cover, shellac, furniture polish and wax, automobile polish-wax-and body polish, dry gloss wax, and cedar oil polish; use since July, '34.

381,567. Lewy Chemical Co., New York City; July 20, '36; insecticides; use since Oct., '94.

381,854. Southport Petroleum Co., Kilgore, Tex.; Aug. 5, '36; gasoline; use since Mar. 13, '36.

384,804. Lubri-Zol Corp., Cleveland and Wickliffe, O.; Oct. 26, '36; lubricating oils and greases and compounds, and motor lubricating oils; use since Oct. 16, '36.

386,654. National Retailer-Owned Grocers, Inc., Chicago, Ill.; Dec. 11, '36; laundry soap, soap chips and granules, and washing solution; use since Oct. 13, '36.

388,805. A. E. Staley Mfg. Co., Decatur, Ill.; Feb. 11, '37; inedible starch products for industrial use; use since Jan. 6, '37.

388,892. Ball Chemical Co., Pittsburgh, Pa.; Feb. 15, '37; film-forming emulsions and bases containing drying oils and soaps for depositing protective coatings on metallic bodies; use since Feb., '37.

388,952. Midway Chemical Co., Chicago, assignor to Midway Chemical Co., Jersey City, N. J.; Feb. 15, '37; insecticides and compounds having odor repulsive to animals; use since Jan. 22, '37.

390,176. Minnesota Mining & Mfg. Co., St. Paul, Minn.; Mar. 17, '37; abrasive cloth and paper; use since May, '33.

390,083. "Orbono" Pflanzenschutzmittel G. m. b. H., Berlin, Germany; Mar. 15, '37; insecticides and fungicides; use since Oct. 1, '32.

390,333. Tennessee Eastman Corp., Kingsport, Tenn.; Mar. 20, '37; wood preservative and vermicide; use since Mar. 21, '34.

390,767. National Oil Products Co., Harrison, N. J.; Apr. 1, '37; treatment textile fibres, paper, etc.; and for removal waxes and other finishing materials from such textile, paper, etc.; use since Jan. 3, '37.

390,920. Sonti Kamesam, Dehra Dun, India; Apr. 3, '37; wood preservative; use since '35.

391,940. Romeo Parent (Laboratories Lorbis), Montreal, Que., Canada; Apr. 27, '37; germicides and disinfectants; use since Aug. 14, '36.

392,513. Acme Bronze Powder Co., New York City; May 10, '37; aluminum paint and paste, bronzing liquids, aluminum and bronze powders; use since Feb., '28.

392,839. Walter G. Baryl (Re-Vi-Vo Products), Chicago, Ill.; May 17, '37; polishes or sealers for cleaning and polishing painted, varnished, or other finished surfaces; use since May 8, '37.

393,083. Metasap Chemical Co., Harrison, N. J.; May 21, '37; metallic soaps, and other organic fatty acids in combination with metals other than sodium of potassium; use since Jan. 5, '17.

393,137. Kraus Chemical Works, Brooklyn, N. Y.; May 22, '37; roach powder; use since '17.

393,199. Romeo Parent (Familex Products Co.), Montreal, Que., Canada; May 24, '37; machine oils; use since July 1, '28.

393,272. Fry Bros. Co., Cincinnati, O.; May 26, '37; cleaning compound for laundries and dry cleaning establishments; use since Apr. 2, '37.

393,333. Hecker Products Corp., New York City; May 27, '37; common and laundry soap; use since Mar. 3, '37.

393,757. Emsee Mfg. Co., Monroe, Mich.; June 7, '37; household cleaning preparation; use since May 1, '36.

394,397. Chemco Photoproducts Co., Glen Cove, L. I., and New York City; June 23, '37; photo-engraving and photographic chemicals; use since Jan. 1, '20.

394,697. Commerciale Italiana Societa Anonima per il Rayon Cisa-Rayon, Rome, Italy; June 30, '37; artificial textile fibres; use since '34.

394,962. Morris Dulman, Boston, Mass.; July 7, '37; paints, varnish, prepared shellac, paint enamel-drier and remover, and bronzing liquid; use since July 1, '37.

394,991. Kansas City Testing Lab., Kansas City, Mo.; July 8, '37; weighting materials for oil well drilling fluids, muds, and suspensions; use since June 1, '37.

395,146. Fulghum & Co., Los Angeles, Calif.; July 12, '37; spar varnish; use since June 15, '37.

395,162. I. Beck & Sons, Inc., New York City; July 13, '37; linoleum cement, used also as general adhesive; use since July, '25.

395,200. North American Dye Corp., Mt. Vernon, N. Y.; July 14, '37; dyes, bluing and preparation for removing colors from all fabrics, and stains from white goods; use since Apr., '15.

† Trade-marks reproduced and described cover those appearing in the *U. S. Patent Gazettes*, middle week Oct. 12 through Nov. 9, inclusive.

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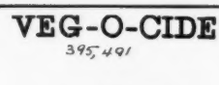

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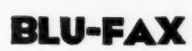

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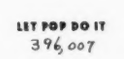

396,007

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395,210. Varnish Products Co., Cleveland, O.; July 14, '37; chemical supplies for photo-engraving; use since June 7, '37.

395,293. Hercules Powder Co., Wilmington, Del.; July 16, '37; chemical insecticidal ingredient, having property of increasing insecticidal efficiency of other compounds; use since Dec. 3, '36.

395,365. Harold Wm. Walter (General Research Labs.), Muscatine, Iowa; July 17, '37; anti-freeze solution for radiators; use since May 17, '37.

395,376. Chas. Atwood Symmes (Mirrowax Co.), Danvers, Mass.; July 17, '37; automobile and furniture polish; use since Mar., '37.

395,423. Master Builders Co., Cleveland, O.; July 19, '37; material to be used for concrete, mortar, etc., to improve properties thereof; use since July 12, '37.

395,438. W. & M. Fertilizer Co., Mansfield, O.; July 19, '37; fertilizers, use since Jan. 10, '37.

395,466. American Oil Co., Balto., Md.; July 21, '37; lubricating oils and greases; use since June 30, '37.

395,491. Soy Bean Processing Co., Waterloo, Iowa; July 21, '37; insecticide; use since June 9, '37.

395,575. Robert H. Harkins (Nott Mfg. Co.), New York City; July 23, '37; insecticide for ants; use since Mar., '34.

395,591. Pennsylvania Chemical Corp., Orange, N. J.; July 23, '37; substance for inducing roots to grow on cuttings; use since May 12, '37.

395,616. Paul Gibson, Richmond, Va.; July 24, '37; automobile cleaner, also cleaner for upholstery, fabrics, rugs, etc.; use since June 20, '34.

395,619. Hercules Powder Co., Wilmington, Del.; July 24, '37; paper size; use since Apr. 14, '37.

395,645. Marathon Paper Mills Co. (Marathon Chemical Co.), Rothschild, Wis.; July 26, '37; tannery materials and extracts containing lignin-sulfonic acid compounds; use since July 19, '37.

395,693. American Chemical Paint Co., Ambler, Pa.; July 28, '37; paints, thinners, primers, enamels, and varnishes; use since May 6, '37.

395,754. Fink-Roselieve Co., Inc., New York City; July 29, '37; photographic preparations and photographic chemicals; use since Oct. 16, '36.

395,843. Standard Oil Development Co., Linden, N. J.; July 30, '37; dye for oils; use since July 9, '37.

395,872. Manhattan Lubricants Co., Inc., Brooklyn, N. Y.; July 31, '37; non-slip composition for pulleys; use since July 26, '37.

395,935. Turco Products, Inc., Los Angeles, Calif.; Aug. 2, '37; abrasive and/or detergent cleaning compounds; use since Jan. 1, '35.

395,954. Paraffine Companies, Inc., San Francisco, Calif.; Aug. 3, '37; prepared aluminum powders and pastes, and liquid vehicle to be mixed therewith to provide material for use as a paint, protective coating, and heat reflecting medium; use since Oct., '35.

396,007. Popular Brands, Inc., Wyncote, Pa.; Aug. 4, '37; dish washing detergent; use since July 12, '37.

396,026. Central Chemical Corp. of Md., Hagerstown, Md.; Aug. 5, '37; fertilizers; use since May 12, '37.

396,021. Beatrice Creamery Co., Chicago, Ill.; Aug. 5, '37; paint, use since July 26, '37.

396,027. Jack Cramer, San Jose, Calif.; Aug. 5, '37; insecticide and fungicide; use since Oct., '35.

396,057. Master Glaze Co., Milwaukee, Wis.; Aug. 4, '37; production lustre upon finished surfaces; use since July 7, '37.

396,165. Pure Carbonic, Inc., New York City; Aug. 7, '37; liquefied carbon dioxide; use since June 10, '35.

396,173. Union Oil Co. of Calif., Los Angeles, Calif.; Aug. 7, '37; lubricating oils; use since June 21, '37.

396,235. McKale's, Inc., Seattle, Wash.; Aug. 10, '37; lubricating oil; use since June 14, '37.

396,247. Viscol Co., Stamford, Conn.; Aug. 10, '37; oils and greases for waterproofing, making flexible, stuffing, finishing, and improving texture of leather and fibrous goods; use since July 7, '37.

396,324. Valrie McMahan, Washington, D. C.; Aug. 12, '37; toilet and laundry soaps and powders; use since May 26, '37.

396,327. Owl Truck & Materials Co., Compton, Calif.; Aug. 12, '37; clay product in powdered form mixed with water to form lubricating and cooling agent for circulation through the drill pipe in rotary well drilling equipment, commonly referred to as rotary mud; use since May 1, '37.

396,349. Barber Co., Inc., Phila., Pa.; Aug. 13, '37; asphalt emulsions; use since July 16, '37.

396,437. American Bitumul Co., Wilmington, Del., and San Francisco; Aug. 16, '37; asphaltic emulsions and compositions; use since Dec. 31, '36.

396,449. Cook Paint & Varnish Co., No. Kansas City, Mo.; Aug. 16, '37; paints; use since Aug. 12, '37.

396,450. Cook Paint & Varnish Co., No. Kansas City, Mo.; Aug. 16, '37; paints; use since Aug. 12, '37.

396,451. Cook Paint & Varnish Co., No. Kansas City, Mo.; Aug. 16, '37; paints; use since Aug. 12, '37.

396,452. Cook Paint & Varnish Co., No. Kansas City, Mo.; Aug. 16, '37; paints; use since Aug. 12, '37.

396,453. Cook Paint & Varnish Co., No. Kansas City, Mo.; Aug. 16, '37; paints; use since Aug. 12, '37.

396,498. James B. McComb, New York City; Aug. 17, '37; rug and carpet cleaning compounds; use since Aug. 5, '37.

396,525. Woburn Degreasing Co. of New Jersey, Kearny, N. J.; Aug. 17, '37; drying oils for printing inks; use since Dec. 19, '35.

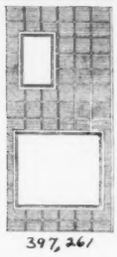
396,532. Ever-Plastics Corp., New York City; Aug. 18, '37; preparation used in grafting and dressing of trees and plants; use since Aug. 11, '37.

ISOLINE.
396,525

P V
396,594

TRIOX
396,672

Esso
396,844


397,261

GRAFTEX
396,532

VITA WHITE
396,609

DOWAX
396,673

WING A WAY
396,923

SULFIX
396,549

CHLOROLAC
396,961

CHEVRON
396,698

Pin-Money Payments
397,499

MIXOL
396,543

WHITTEMORE-WRIGHT CO. INC. MORITE BRAND BOSTON, MASS.
396,653

CHEVRON
396,699

MARINE
396,978

396,537

396,718

TECA
397,008

POMOL
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LARVEX
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IT-FLOPS
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TILON
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NIOX
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ARBOROL
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NU-PRO
Sole Mellower
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Esso
397,058

Nam-Tone
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BOTANO
396,666

COLOR ART
396,730

REZITOX
397,193

SILKONOL
397,726

GREENOL
396,668

Q T
396,593

PENTOX
396,669

DEFLOC
396,804

KRALIN
397,245

CAL-AID
398,090

396,549. Sherwin-Williams Co., Cleveland, O.; Aug. 18, '37; insecticides and fungicides; use since July 18, '37.

396,543. Mixol Corp., New York City; Aug. 18, '37; paint extender; use since Aug. 5, '37.

396,554. Acme White Lead and Color Works, Detroit; Aug. 19, '37; paints; use since Feb. 1, '29.

396,633. E. I. du Pont de Nemours & Co., Wilmington, Del.; Aug. 21, '37; explosives in nature of nitrate of ammonia compounds; use since July 29, '36.

396,583. Henry Howard Sessions, Los Angeles, Calif.; Aug. 19, '37; lubricating oils and greases and extreme pressure oils; use since Feb. 2, '37.

396,593. Cities Service Oil Co., Bartlesville, Okla.; Aug. 20, '37; quenching oil; use since July 22, '37.

396,594. Cities Service Oil Co., Bartlesville, Okla.; Aug. 20, '37; journal and heavy duty oil; use since July 22, '37.

396,609. New Products Corp., Indianapolis, Ind.; Aug. 20, '37; bleaching antiseptic and germicidal compound, having also cleaning properties; use since May 6, '37.

396,653. Whittemore-Wright Co., Inc., Charlestown, Mass.; Aug. 21, '37; tanning and textile oils; use since Sept., '27.

396,654. Zonite Products Corp., New York City; Aug. 21, '37; insecticide and mothproofing composition; use since Aug. 2, '22.

396,665. California Spray Chemical Corp., Wilmington, Del., and Richmond, Calif.; Aug. 23, '37; insecticides, fungicides, and germicides; use since Feb. 19, '37.

396,666. California Spray Chemical Corp., Wilmington, Del., and Richmond, Calif.; Aug. 23, '37; insecticides, fungicides, and germicides; use since Feb. 5, '37.

396,668. California Spray Chemical Corp., Wilmington, Del., and Richmond, Calif.; Aug. 23, '37; insecticides, fungicides, and germicides; use since Nov. 11, '36.

396,669. California Spray Chemical Corp., Wilmington, Del., and Richmond, Calif.; Aug. 23, '37; herbicides and insecticides; use since May 14, '36.

396,672. California Spray Chemical Corp., Wilmington, Del., and Richmond, Calif.; Aug. 23, '37; herbicides and insecticides; use since Feb. 5, '37.

396,673. Dow Chemical Co., Midland, Mich.; Aug. 23, '37; antidesiccant preparations to be applied to live plants and trees to prevent loss of moisture from trunk and foliage; use since Nov. 30, '35.

396,698. Standard Oil Co. of California, Wilmington, Del., and San Francisco, Calif.; Aug. 23, '37; lubricating and flushing oils; use since May 23, '36.

396,699. Standard Oil Co. of California, Wilmington, Del., and San Francisco, Calif.; Aug. 23, '37; household, professional, and commercial cleaning solvents; use since May 23, '36.

396,718. B. Heller & Co., Chicago, Ill.; Aug. 24, '37; enamel cleaner; use since Feb. 24, '37.

396,721. Manufacturing Labs., Inc., Boston, Mass.; Aug. 24, '37; preparation for mellowing leather; use since May 27, '36.

396,730. American Crayon Co., Sandusky, O.; Aug. 25, '37; poster paints; use since Oct., '36.

396,804. Cowles Detergent Co., Cleveland, O.; Aug. 27, '37; detergent with or without soap or other emulsifying agent for use with water; use since July 30, '37.

396,844. Standard Oil Co. of N. J., Wilmington, Del.; Aug. 27, '37; leather oil; use since June 29, '37.

396,923. Kilgore Development Corp., Washington, D. C.; Aug. 30, '37; insecticide and insectifuge; use since Aug. 26, '37.

396,961. Mathieson Alkali Works, Inc., New York City; Aug. 31, '37; chlorine bactericide, germicide, and deodorant for dairy use; use since Aug. 4, '36.

396,978. Central Soap Co., St. Paul, Minn.; Sept. 1, '37; soap powder; use since '02.

397,008. Tennessee Eastman Corp., Kingsport, Tenn.; Sept. 1, '37; synthetic staple fiber; use since July 31, '37.

397,032. It-Flops Mfg. Co., Brooklyn, N. Y.; Sept. 2, '37; insecticide; use since Aug. 25, '37.

397,058. Standard Oil Co. of N. J., Wilmington, Del.; Sept. 2, '37; leather oil; use since June 29, '37.

397,193. I. J. Laucks, Inc., Seattle, Wash.; Sept. 7, '37; primers, grain raising inhibitors, paste and liquid paints, varnishes, lacquers, and stains, including therein a germicidal, insecticidal, or fungicidal agent inhibiting mold, bacteria, or vermin; use since Aug. 31, '37.

397,245. Joel B. Clark, Buffalo, N. Y.; Sept. 9, '37; auxiliary lubricants and addition agents to lubricating oils; use since Aug. 31, '33.

397,261. R. H. Macy & Co., Inc., New York City; Sept. 9, '37; polishing and cleaning cloth, scouring powder, soap chips, metal polish, and steel wool; use since Feb., '31.

397,499. Cook Paint & Varnish Co., No. Kansas City, Mo.; Sept. 17, '37; ready-mixed paints; use since Sept. 8, '37.

396,670. California Spray Chemical Corp., Wilmington, Del., and Richmond, Calif.; Aug. 23, '37; insecticides, fungicides, and germicides; use since Apr. 20, '37.

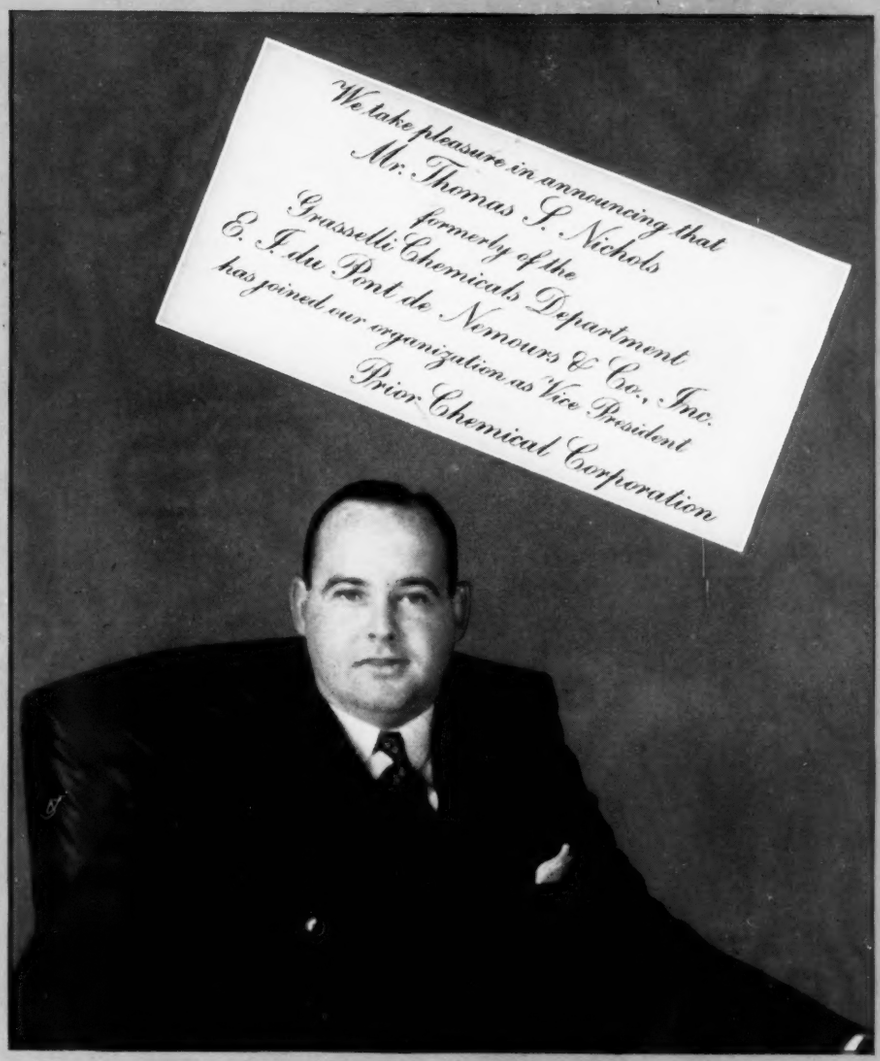
397,505. Ever-Plastics Corp., New York City; Sept. 17, '37; plastic compounds for setting glass, ceramic, metal and composition tiles and glass brick; use since Sept. 7, '37.

397,596. Western Auto Supply Co. (Western Auto Stores), Kansas City, Mo.; Sept. 17, '37; paint enamel; use since April 5, '37.

397,726. Royce Chemical Co., Carlton Hill, N. J.; Sept. 23, '37; for softening and lubricating silk and other textiles, and for their treatment prior to throwing, winding, warping, or knitting; use since Apr. 9, '35.

398,090. Calgon, Inc., Pittsburgh, Pa.; Oct. 4, '37; compound for use in washing glasses used in public places, and for dairy bottles, etc.; use since Sept. 8, '37.

CHEMICAL NEWS & MARKETS


We take pleasure in announcing that
Mr. Thomas L. Nichols
formerly of the
Grasselli Chemicals Department
E. I. du Pont de Nemours & Co., Inc.
has joined our organization as Vice President
Prior Chemical Corporation

ENOUGH WATER

to run the "Queen Mary" 55 Days

In a single day, the Calco Chemical Company's plant at Bound Brook consumes more than enough water to supply the requirements of the Queen Mary's two hundred thousand horsepower boilers during fifty-five full days at sea.

Infinite pains are taken to make sure that this water for the Queen Mary's enormous power plant is so pure and soft that no foreign matter can possibly affect the operation of her vital machinery. Yet its purity is no more carefully guarded than that of Calco's own supply of water. For even this "raw material" must conform to the highest standards in order to maintain the unexcelled quality of Calco dyes and intermediates.

"Calco Dyes are Better Buys"

THE CALCO CHEMICAL COMPANY, INC. · BOUND BROOK, NEW JERSEY

Calco

A DIVISION OF AMERICAN CYANAMID CO.

BOSTON · PHILADELPHIA · PROVIDENCE · NEW YORK · CHARLOTTE · CHICAGO · PATERSON

ZEISBERG HEADS "ENGINEERS"

A. I. Ch. E. Meeting in St. Louis Heard Notable Address on Labor Conditions—Visits to Monsanto and Shell—Students Meeting Successful—

More than 450 members from every state and 155 student members from 25 different chapters attended a notably successful meeting of the American Institute of Chemical Engineers in St. Louis the week of Nov. 15. Visits to the Monsanto and Shell Petroleum local plants were trips of more than usual interest and value, and outstanding among the papers submitted were those by Profs. Vilbrandt, Sherwood, and Fairlie.

Round Table Discussion

A round table discussion on practical industrial problems for the members of the student chapters was introduced by A. E. Marshall: the smaller groups being led by C. A. Thomas, Lynn Watt, D. S. Dinsmoor, B. E. Thomas, T. S. Carswell, all of Monsanto, Gustav Egloff, Universal Oil Products, and C. B. Fox, Aluminum Ore. Speaker at the student's own banquet, Monday evening, was Harry Curtis, of T. V. A. This entire student program was most effectively worked out by Profs. L. E. Stout of Washington and J. L. Elgin of Princeton.

For many the "high spot" of the St. Louis meeting was the speech at the banquet by Whiting Williams, well-known author and industrial relations expert, who in a sane and candid manner discussed "What's on the Worker's Mind Today?" He put great stress upon a more friendly and frank effort on the part of employers to sell their ideas to their workers in competition with the outside union organizers, and said in part:

"My observation is that the gulf between employer and employee is false, is wrong, and that on the contrary, the chief issues between employer and employee are made up of small individual matters and grievances. The importance of the individual grievance, the absolute necessity of taking care of the individual grievance when it represents one man, instead of letting it represent the unhappiness of 2 and 3 and 4 and then 100 and 200 men is all in line with my observation.

"Everywhere," continued Mr. Williams, "I find these men are perfectly willing over there and over here to join up with the activities of men who have the guts and the gumption to assure them that they will go in and pound the table on behalf of dissatisfactions which the management, according to the experience of these workers, has not been willing to remedy.

"I have become convinced that the typical worker, this representative of the middle crowd in general, does not go outside and bring in the outside leader until he has become more or less convinced there is no other way to get these chestnuts out of the fire of his discontent. And, I submit if that is true, then the whole outlook for the future is more hopeful than is conceived.

"All the tensions and stresses and strains in the individual lives of millions and millions of our fellow citizens during the depression were calculated to put one thing in the worker's mind—fear. FEAR!

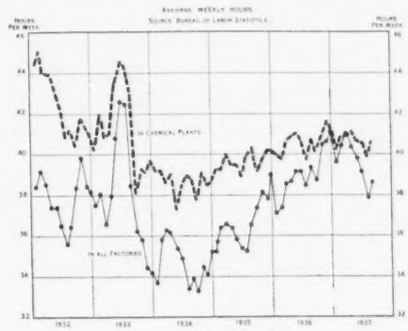
"The weakness, therefore, of our present effort at the organization of the worker is that while the C. I. O., a vertical union, does give the service of protection, and a service that is of tremendous value to the worker, especially the worker that has in his mind the recent experience of hard times, nevertheless, its weakness is that the moment that that fear begins to dissipate, the moment that the employer begins to give more security in terms of seniority plan, or the more regular work becomes so that a man does not have to worry about getting 20 hours this week and 10 the next but has his 40 or 48 week one week after another, then the weakness of the whole C. I. O. movement becomes apparent. The moment that a worker finds himself secure upon his job as a platform, his self-respect being a minimum requirement as a human being, the moment that he begins to feel that he can step upon that platform without feeling it is going to give way because he has had 48 hours week after week and an average week and he has an employer who plays fair and does not fire him on account of favoritism, then he begins to think of that job not so much as a platform but as a ladder, a ladder to an important job.

"So I feel that the difficulties of prosperity are going to be such as to make it very, very hard for the newer C. I. O. type unions to hold the skilled, the semi-skilled and the unskilled together in one particular group.

"The one trouble today," concluded Mr. Williams, "is that the American employer has gotten too far away from his men and that he has been looking for some system, some formula, some law, some compulsion, some method that would enable us to get away from the disagreeable necessity of playing fair with the individual worker."

Zeisberg Elected President

Frederick Clemens Zeisberg, du Pont vice president in charge of development work, was elected president of the Institute for the ensuing year, succeeding Martin Ittner, Colgate-Palmolive-Peet's chief chemist. The new president, after graduation from the University of Virginia, went to the Mathieson Alkali's Saltville plant, and from thence to du Pont in 1909.



Other Officers Elected

Other officers elected are Webster N. Jones, Dean of Engineering, Carnegie Institute of Technology, vice-president; Stephen L. Tyler of N. Y. City, secretary; C. R. DeLong of N. Y. City, treasurer; and the following directors: Lawrence W. Bass, Mellon Institute; Harry A. Curtis, chief chemical engineer, T.V.A.; Francis C. Frary, director of research, Aluminum Co. of America; and Ellery L. Wilson, vice-president, Rumford Chemical Works.

Slogan Contest Winners

Winners of the 10 second prizes in the slogan contest of the Exposition of Chemical Industries, are as follows:—Paul Elkin, *Facts About Sugar*, N. Y. City; Louis Paul Flory, Boyce Thompson Institute for Plant Research, Yonkers, N. Y.; C. H. Hazard, Hazard Advertising Corp.; Van B. Hooper, sales promotion manager, Louis Allis Co., Milwaukee; Robert H. Muller, Nyanza Color & Chemical, N. Y. City; Lenore K. McCafferty, advertising dept., Hercules Powder; Edward J. Pechin, advertising department, du Pont; Robert D. Potter, news editor, *Science Service*; Matthew J. Schiebel, Wishnick-Tumpeer, Inc., N. Y. City; and Foster D. Snell.

First prize to Norman E. Diehl, assistant division purchasing agent, E. I. du Pont de Nemours & Co., was announced in the November issue of C. I., p.505.

A. I. C. in New Role

The American Institute of Chemists is accepting the management of the Chemists' Unemployment Committee in the future, it was disclosed at a recent N. Y. Chapter meeting held in the Chemists' Club, where A. Cressy Morrison spoke of the work and aims of the committee in the past. Mr. Morrison acted as chairman of the finance section of the general committee which was headed by Frank G. Breyer.

Ceramic Engineers to Organize

An Institute of Ceramic Engineers is now in process of formation and in February will receive applications for membership from ceramic engineers. First meeting is to be held during the Annual Meeting of the American Ceramic Society in New Orleans, March 27 to April 2, 1938. Additional information can be obtained from John L. Carruthers, Lord Hall, Ohio State University, Columbus, Ohio.

To Certify Quality

American Council of Commercial Laboratories is a new organization of independent laboratories, to protect and certify the quality of advertised goods. Preston S. Millar, Electrical Testing Laboratories, N. Y. City, is president.

National Carbon Loses Activated Carbon Appeal

7th District Circuit Appeals Court Voids Products Claims of Chaney Product—Reverses Decision in Favor of National Shade Cloth—

Chaney patents on activated carbon, purchased in '27 and '33 by National Carbon from the American Solvent Recovery Corp., Columbus, under which several suits for infringement have been brought, were declared invalid on certain claims by the U. S. Court of Appeals, 7th Circuit, on Nov. 20. Sitting in Chicago, the decision declared Claims 14, 15 and 17 of Patent No. 1,497,543 and Claims 9, 11 and 12 of Patent 1,497,544, granted to N. K. Chaney June 10, 1924, invalid because "such claims are for the function, result or effect of the real invention and, therefore, void." The case came to appeal from the District Court for the Northern District of Illinois, Eastern Division, in the matter of National Carbon Co., plaintiff vs. Western Shade Cloth Co., defendant, plaintiff alleging that the above claims were infringed by Western Shade by its use of activated carbon for the recovery of solvent vapors. (See C. I., Nov. 1936, p.526).

Western Shade maintained in both the District and the Circuit Courts that these claims were void because they were not limited to what the patentee described but covered any product endowed with the qualities of retentive power or service life claimed to be that of what the patentee discovered and described.

Judge Lindley, in the unanimous decision of the Court, said, "A manufactured article may be claimed as a new product, but this claim of the product must set forth its essential characteristics and qualities or define it as the product resulting from a described process and, if the character of the product depends upon the manner in which it has been produced, particularly, it should be claimed only as the thing produced by the specific process . . . In the present case the product is defined solely in terms of the function of the product . . . Thus, to give effect to the claim, would be to grant the monopoly upon any carbon, whatever its composition, its structure or the manner of its manufacture, which has the claimed adsorbent power. . . Chaney . . . could not, as he attempted to do in the product claims in suit, by reciting the achieved effect of this specific article, obtain a monopoly upon any article that would produce an identical effect without regard to whether it was made as he made it or by a process substantially equivalent thereto . . . The claims are invalid. The decree of the District Court is reversed with directions to proceed in a manner consistent with this opinion."

The appeal was argued on behalf of Western Shade Cloth Company by Pennie, Davis, Marvin & Edmonds, and for National Carbon by Watson, Bristol, Johnson & Leavenworth.

Last Minute Price Changes

Last minute price changes include higher schedules for both disodium and trisodium phosphates and a 30c decline in acetate of lime. The new prices for disodium phosphate in carload quantities, delivered N. Y. City, are $1.95 in bags, and $2.15 in barrels, while the l.c.l. quotations are $2.35 for bags, and $2.55 in barrels, delivered N. Y. Trisodium in carlots N. Y. City is $2.10 in bags, $2.30 in barrels; l.c.l. quantities delivered N. Y. are $2.50 in bags, and $2.70 in barrels. The carlot works prices are in each case 10c less than the carlot prices for delivery in N. Y. City.

List prices on acetic will not be changed despite the latest sharp reduction in acetate of lime. Contracts on acetic for 1938 for the first time do not carry the usual acetate of lime price readjustment clause.

The leaded zinc oxides have been revised downward. The 35% material is off ¼c to a 6c basis for bags in carlots, and the 50% material is also quoted at 6c, a decline of ⅜c. The usual differential between 35% and 50% material has thus been eliminated. Saponification and soap lye glycerin grades turned soft and were nominal at 9⅞c and 9c respectively.

COMING EVENTS

Exposition of Chemical Industries, Grand Central Place, N. Y. City, Dec. 6-11.
Second Annual Symposium, Division of Physical & Inorganic Chemistry, Cleveland, Dec. 27-29.
Seventh National Organic Chemistry Symposium, Division of Organic Chemistry, Richmond, Va., Dec. 28-30.
National Association of Dyers and Cleaners, Hotel Stevens, Chicago, Jan. 17-20, 1938.
Fifth International Heating & Ventilating Exposition, Grand Central Palace, New York City, Jan. 24-28, 1938.
The American Society of Refrigerating Engineers, 33rd Annual Meeting, Roosevelt, N. Y. City, Jan. 25-27, '38.
American Institute of Mining & Metallurgical Engineers, Annual Meeting, N. Y. City, Feb. 14-18, '38.
American Association of Petroleum Geologists, 23rd Annual Meeting, Roosevelt Hotel, New Orleans, March 16-18, '38.
American Ceramic Society, 40th Annual Meeting, New Orleans, March 27-April 2, '38.
National Petroleum Association, Cleveland, Ohio, April 13-15, '38.
A. C. S., 95th Meeting, Dallas, Apr. 18-21, '38.
International Petroleum Exposition, Tulsa, Okla., May 14-21, '38.
10th International Congress of Chemistry, Rome, May 15-21, '38.
Flavoring Extract Manufacturers' Association, Hotel Traymore, Atlantic City, June 27-29, '38.

LOCAL TO NEW YORK*

Dec. 10th. Joint Meeting A. C. S. and Society of Chemical Industry.
Dec. 14th. The American Institute, Aldine Club.
Jan. 7th. Perkin Medal Award.

* Chemists' Club, unless otherwise noted.

Westfall Chemical has been chartered in Buffalo, N. Y., to engage in the manufacture and distribution of chemical products.

Seek Higher Rates

Heads of the big railway companies pictured a general freight rise now as the needed spur to business, in hearings which opened before the I.C.C. in Washington on Nov. 29. Each executive stressed that the increase in freight and passenger rates asked would result in an immediate increase in employment, within and without the industry, and would supply momentum to business and would create a spirit of confidence that "would get everybody moving forward."

The carriers are seeking I.C.C. approval for freight and passenger rate increases totalling $508,000,000. Not only the railroads, but the truckers and intercoastal steamship lines are asking for higher freight rates and the manufacturers of the country are faced with the possibility of generally advanced rates on a wide range of commodities. The request of the truckers for a blanket and countrywide 15% increase was timed to follow the latest request of the railroads by several days. Thirteen water carriers operating between Atlantic and Gulf ports and Chesapeake Bay on Nov. 18 asked the I.C.C. for a 15% rate increase similar to that sought by the Class I railroads and on similar grounds.

Heads Textile Research

Dr. Elvin H. Killheffer of the du Pont organization was elected to succeed the late Francis P. Garvan as president of U. S. Institute for Textile Research, at the annual meeting of that organization on Nov. 14 at the Hotel Commodore in N. Y. City. Dr. Killheffer, one of the founders and executive vice-president of the Institute, is a former president of the American Association of Textile Chemists and Colorists and also of the Newport Chemical Works which is now merged in E. I. du Pont de Nemours & Co. He presided at the dinner, and recommended to the textile industry the establishment of a graduate institute of textile research, along some such lines as the Institute of Paper Chemistry at Madison, Wis.

Chemicals and '39 World's Fair

Chemicals and plastics will have a building to be devoted exclusively to their exhibits at the N. Y. World's Fair, 1939. The site is centrally located in the Means of Production Zone on the swing of the outer avenue leading from Theme Center of exposition to eastern focal plaza near head of Amusement Zone.

The Fair Corporation has scheduled construction of the building for early '38. As shown in model and drawing, it takes the form of a square affording a minimum of 18,000 sq. ft. of net display space arranged for easy circulation of visitors about island exhibits. The Chemicals and Plastics Building was designed by Joseph H. Freedlander and associates, Maximilian Bradford Bohm and Charles W. Beeston. Its cost is set at $200,000.

Du Pont Takes Fair Space

Contracts to rent plots upon which will be erected an all-glass display building and a structure for the dramatization of industrial chemistry were signed last month by Libby-Owens-Ford Glass, which contracted for 28,428 sq. ft. in the community interests zone, at a rental cost of $15,577, and du Pont, taking 36,222 sq. ft. in the means of distribution zone, at a cost of $14,258.

Compressed Industrial Gases, Inc., is said to be considering the erection of a $350,000 plant at Evansville, Ind.

Hercules Appoints New Directors

Hercules Powder Co. has four new members on its board of directors—W. R. Ellis, general manager, explosives dept.; Lloyd Kitchel, general manager, Virginia cellulose dept.; P. W. Meyeringh, manager, foreign relations dept., and E. B. Morrow, who resigned as secretary of the company, also was elected a member of the finance committee. H. F. Smith, secretary to the president, was elected secretary of the company. The total membership of the Board of Directors has been raised to sixteen.

Armstrong, Fritzsche, Dies

Arthur David Armstrong, 55, secretary, Fritzsche Brothers, prominent N. Y. essential oil house, died suddenly at his home in Westfield, N. J., on Nov. 28. He joined Fritzsche in 1913 and would have completed 25 years of service next year. Even at this early date plans were being considered for an appropriate celebration upon his induction into the Fritzsche Quarter of a Century Club. Next to his family and business, Mr. Armstrong's fondest attachment was to the activities of outdoor life. He was particularly fond of golf and fishing.

Sawyer Passes On

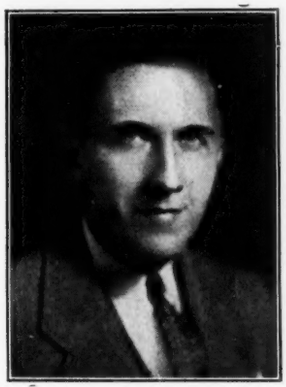
Hilon H. Sawyer, 81, well-known chemist in the essential oil field, died on Oct. 28 at his home in Newark, N. J.

Other Deaths of the Month

Edward N. Boice, 60, treasurer of the Hanson-Van Winkle-Munning Co., Matawan, N. J., died Nov. 6. He first entered the employ of Hanson and Van Winkle, then in Newark, in the fall of 1892 as an office boy, became bookkeeper in 1896 until about 1900, when he became purchasing agent and also continued as bookkeeper. Upon death of Abraham Van Winkle, 1915, Mr. Boice was elected treasurer which he held until the merger of Hanson and Van Winkle with A. P. Munning Co. in 1927. Upon the formation of this combination Mr. Boice was made secretary and also served as sales manager for a short time. He continued as secretary until 1930 when he was made treasurer.

Henry M. F. Faure, widely known in the international fats and oils industries and head of H. M. F. Faure & Co., London, England, died on Nov. 3.

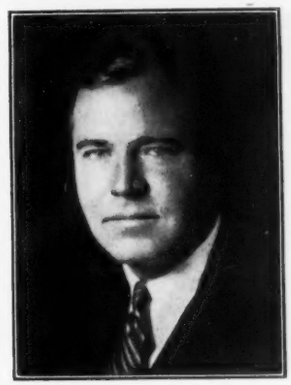
Robert E. Perry, for many years sales manager of T. Shriver & Co. of Harrison, N. J., manufacturers of filter presses, died in the Rahway Memorial Hospital December 3 of pneumonia at the age of 69. Mr. Perry, who was a native of Little River, N. S., had been a resident of Westfield for many years.



E. B. MORROW

W. R. ELLIS

P. W. MEYERINGH



LLOYD KITCHEL

New Members of Hercules' Board of Directors

Heavy Chemicals

Bichromates Advanced ¼¢ per lb.

Carlot Alkali Prices Renewed—Calcium Chloride Advanced 50c to $1.50 per Ton—Acetate of Lime Clause Left Out of New Acetic Contracts—Copper Sulfate Reduced to $4.50—November Shipments Fail to Improve Over October—Two New Chlorine Producers—

Important Price Changes

	Nov. 30	Oct. 30
ADVANCED		
Calcium chloride, drs.	$23.50	$22.00
Potassium bichromate	.08¾	.08½
Potassium carbonate, tks.	.02⅞	.02¾
Sodium bicarbonate	1.85	1.75
Sodium bichromate	.06¾	.06½
DECLINED		
Acid formic	$0.10½	$0.11
Antimony, metal	.14¾	.17¼
Copper carbonate	.15¾	.16½
Copper, metal	11.00	11.75
Copper oxide, black	.17	.17½
Copper sulfate	4.50	4.75
Glycerin, Dynamite	.19½	.21½
Saponification	.14½	.16
Soap lye	.13	.14½
Sodium stannate	.28½	.32
Tin crystals	.34	.37
Tin metal	.41¾	.48⅜
Tin oxide	.50	.54
Tin tetrachloride	.21¼	.24½

Two Enter Chlorine

Outstanding heavy chemical news of the month were the announcements of two alkali producers to enter the chlorine field. Michigan Alkali will shortly start construction of a $1,000,000 plant at Wyandotte, for the production of chlorine and caustic by a new process, rights to which have been purchased from British I.C.I. It is stated that the outstanding advantage of the English process is that it produces caustic about 5 times as concentrated as electrolytic methods. Company will do the construction work.

Southern Alkali will also enter chlorine production and operations are scheduled for March. Plant will be the only one south of St. Louis and is expected to play an important role in Texas' growing pulp and paper industry.

New Sodium Chlorate Producer

Late in November news was released of plans for the construction by Penn Salt of a sodium chlorate plant on a site near the Bonneville Dam in Oregon. Chipman Chemical, Bound Brook, N. J., will cooperate and distribute the product.

Nichols Tendered Dinner

Edward J. Maguire, manager N. Y. Metropolitan office, Grasselli Chemicals division, du Pont, was toastmaster at the dinner tendered Thomas S. Nichols, who resigned from the du Pont organization to become a vice-president of Prior Chemical. Among the out-of-town guests were: Howard Mansfield, director of sales, Edward Orem, sales manager of acids and heavy chemicals, J. M. Alvarez, New Haven branch manager, and John McQuade, Albany branch manager.

Robert E. Day, N. Y. office staff of Harshaw Chemical, has been transferred to field work in the Metropolitan area.

With chemical consuming at low ebb, interest last month centered on the contract situation. In alkalies, briefly reported in the October issue, soda ash schedules for carlots were repeated and greater firmness is quite apparent. Carlot quotations for caustic also have been renewed. The l.c.l. prices on ash and caustic have been advanced 10c per 100 lbs. The most striking change is the elimination of the ex warehouse differential. "Bicarb" is higher by 10c.

Bichromates have been advanced ¼c for '38, with soda priced at 6¾c and potash at 8¾c. Producers report chrome ore freight rates steadily advancing and to go higher after the first of the year; acid higher since July; and soda ash to cost more in '38.

Calcium chloride has been advanced 50c to $1.50 per ton. The new schedule lists burlap bags and drums in carlots, delivered, $23.50 to $36.50 per ton; paper bags, $23 to $36; less car lots, $1.68 to $2.43. Liquor prices are unchanged, but solid material is scheduled at $21.50 to $34.50 in car lots, and $1.68 to $2.33 in l.c.l. quantities.

An impressive number of industrial chemical prices remain unchanged for next year. Included in the list are:—Chlorine in tanks, sulfuric, muriatic, nitric, battery acid, boric, aqua ammonia in drums, zinc sulfate, lactic; also bleaching powder, caustic potash, zinc chloride, gray sal ammoniac, sulfide of soda crystals, zinc ammonium chloride, ammonia and potash alums, oxalic acid, ammonium bicarbonate, aluminum chloride (crystals and solution), and acetic. In the latter the time honored acetate of lime price readjustment clause has been eliminated as considered unnecessary, in view of the quarterly price readjustment clause now inserted. It is important that producers of industrial chemicals have continued in most instances to employ the quarterly or semi-annual price adjustment clauses adopted first two years ago and more widely employed in the last contract period.

Copper and Tin Salts Lower

Price changes in November were almost wholly the result of sharp declines in basic metals. With copper at 11c producers of copper sulfate announced a $4.50 car lot quotation, although stocks are still extremely low and spot deliveries hard to obtain. Black copper oxide was reduced ½c to a 17c level, and copper carbonate off ½c to 15¾-16¾c. Tin slumped badly and at the close of the month sodium stannate was quoted at 28½c, tin crystals at 34c, the oxide at 50c, and tetrachloride at 21¼c. Antimony declined from its recent high to a basis of 14¾c, with demand extremely light.

Glycerin prices weakened quite noticeably in the past 30 days. C. P. material was off 2c, to 19½c in car lots, dynamite grade to 19½c, saponification down to 14½c, a 1½c reduction, and soap lye to 13c, also a decline of 1½c.

Chemical Consumption Fails to Improve

No appreciable improvement in the chemical consumption can be reported, and in many lines curtailment has been even more pronounced. October polished plate glass production totalled 14,854,910 sq. ft., as against 16,479,144 in September and 20,752,657 in October of last year. However, for the first 10 months total production is still ahead of the corresponding period last year, the figures being 171,154,480 and 147,794,979 respectively. *The American Glass Review* states: "Taking the glass industry as a whole, the tendency was downward in sales and production during the week (Nov. 20-26) and prospects for the final month of '37 are not bright." Several glass plants have been closed or operations considerably curtailed.

September shoe output was down nearly 18% from last year as against a 5.3% decline in August. September production totalled 33,616,864 pairs as compared with 38,562,959 in August and 40,974,713 in September of '36. Production for the first 10 months of '37 is still 8.8% over the same months of last year. October output is estimated to have dropped to well under 30,000,000 pairs and may have gone as low as 27,000,000, and November estimates are well below the 25,000,000 pair mark.

Showing the effect of the recently initiated curtailment program on production, newsprint output in Canada for October increased only 4.5% over the same month a year ago, compared with a gain of 16.8% for the first 10 months of the year. In the U. S. and Newfoundland output was lower than for a year ago, so that the entire North American production in October rose only 2.1% over the corresponding period last year.

Textiles are still in the doldrums. Even rayon production has fallen off perceptibly.

Coal-Tar Solvent Prices Renewed

Producers Offer Contracts for First Half of '38—Phthalic Anhydride, Maleic Prices Unchanged—Steel Down Below 30%—Dye Market Quiet—Domestic Crude Naphthalene Firmer—Milwaukee Business Leaders Ask du Pont to Remain at Carrollville—

Coal-tar chemical producers were busy in November soliciting contracts at unchanged price levels for the first half of '38 on benzol, toluol, xylol, and solvent naphtha. Phthalic anhydride and maleic acid contracts are also being renewed without price change. As the month closed no announcements had been made on either cresylic or creosote oil.

Shipments of coal-tar solvents were disappointing last month. Hesitancy among automotive producers has slackened demand from manufacturers of coatings and further labor trouble in the Akron tire area has prevented improvement in shipments moving into that field. Benzol shipments, however, were somewhat better than had been anticipated.

Steel Records Sharpest Decline

Steel production at the end of November was reported at 29.6% of capacity, the sharpest decline on record. Such a sudden reversal was thought impossible two months ago, and an immediate effect is a drop in coking operations with a greatly reduced supply of coal-tar crudes available. Nor is the first quarter outlook very promising in steel. Earlier estimates are being revised downward, but it is still expected that production will show some improvement over the November-December levels.

Quiet conditions prevailed in dyestuffs. A slightly better inquiry especially for some of the darker shades was reported, but the demand as a whole reflects the present state of reduced activity in textiles, tanning, etc. Prices remain steady and little change is anticipated for the price situation in intermediates is one of distinct firmness.

Spotty conditions prevail in the market for crude naphthalene. Refiners and other users are apparently holding aloof from sizable commitments awaiting further developments in the business situation. The price for domestic crude is distinctly firm, but freer offerings from abroad tended to weaken the imported price.

Demand for phenol is still good, most calls coming from plastic and resin manufacturers. A firm market continues for cresol. In most quarters it is reported that export shipments of coal-tar chemicals have eased up somewhat from the heavy volume moving out during the summer and early fall, yet on certain of the intermediates it is still difficult to get spot stocks without some delay.

Carrollville Operation Sought

Business men in Milwaukee are making every effort to have du Pont reconsider plans for the complete removal of manufacturing operations at the Carrollville plant. A delegation, including representatives of the Milwaukee Association of Commerce, attended a meeting in Wilmington early in the past month, seeking to avert transfer of the dye plant or to secure at Carrollville another du Pont manufacturing activity. The du Pont Co. bought the Carrollville plant about 5 years ago from Newport and has been gradually transferring operations to the Deepwater plant, near Penns Grove, N. J. It is said that the du Pont representatives stated that the removal plans were based on economic reasons; that the company could not manufacture at Carrollville against competitors closer to raw materials and the market for finished goods.

Leases Creosote Plant

American Lumber and Treating Co., Chicago, leases the Central of Georgia creosote plant at Macon, Ga., operated by the railroad for 25 years. New owner will continue to do work for the Central of Georgia and will also seek outside work.

Beyond the Rainbow

Calco has a new film, "Beyond the Rainbow," now available for private showings, which dramatically tells the story of the dye industry, and is notable as the first time that sound has been used on 16 mm. color film. Another "first" in producing "Beyond the Rainbow" is in duplicating color on 16 mm. films. Six prints were made, all as vivid and colorful as the original. The film itself is both educational and entertaining and runs 44 minutes. Clubs, universities, schools, associations, etc., interested in securing this unusual picture should write to the Motion Picture Laboratories of The Calco Chemical Company, Bound Brook, N. J.

Charles C. Randolph, 65, manager of the N. Y. Tarvia Department of Barrett, died Nov. 7.

Koppers Co. has been awarded a contract by American Rolling Mill Co. to construct 15 new coke ovens at its blast furnaces in Hamilton, Ohio.

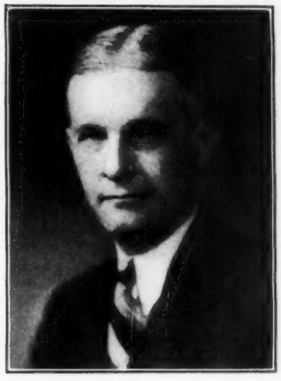
Coal-Tar Chemicals

Important Price Changes

	Nov. 30	Oct. 30
ADVANCED		
Naphthalene, crude, dom.	$2.60	$2.50
DECLINED		
Naphthalene, crude, imp.	$2.20	$2.25
Paradichlorbenzene	.11	.14

North Joins Arthur D. Little, Inc.

Dexter North, Chief of the Chemical Division, U. S. Tariff Commission, has resigned to become associated with Arthur D. Little, Inc., research chemists and engineers of Cambridge, Mass., as



their Washington technical representative. In his new work he will continue to obtain and assemble technical, economic, and statistical information concerning the chemical and other process industries from the many active sources at Washington.

Huisking Asks Action

The 47th Annual Meeting and Election of the Drug, Chemical and Allied Trades Section of the N. Y. Board of Trade was held Nov. 16, at the Hotel Pennsylvania. Joseph A. Huisking, chairman of the Section, in his annual report, called for aggressive business leadership, and stated: "We have all been neglectful of our duty as citizens in not keeping in constant touch with our representatives so that they might understand our position. It has been demonstrated that it is not always the majority that wins, but rather the organized minority. The majority, believing in the old adage of safety in numbers, in many cases does not take the trouble to express its views. Recent utterances by the Administration would indicate that some consideration might now be given to business in general, and we should take advantage of this 'change of heart,' and perhaps by a constant string of letters and telegrams to our representatives and senators, we may have a voice in the adoption or rejection of measures that may be proposed."

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POTASSIUM CITRATE

SODIUM CITRATE

PFIZER QUALITY

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Mercurials Reduced When Quicksilver goes to $83

C. P. Glycerin Now at 19½c—Borax and Boric Acid Contracts Renewed at Unchanged Levels—Tartars Steady—Acetanilid Up 5c—Important Aromatic Chemicals Reduced—

Fine Chemicals

Fine chemicals in November were distinctly routine in market character. Aside from a few seasonal items demand was spotty, since consumers were only purchasing for immediate requirements.

The downward spiral of mercury prices continued with competition keen between domestic and imported for whatever little actual business existed. With quicksilver breaking through the $85 per flask level to $83, producers of mercurials found it difficult to maintain existing schedules, although the differentials were still below the normal averages. As a result, lower prices were anounced for calomel, corrosive sublimate, and red and white precipitates.

Weakness in Glycerin

C. P. glycerin declined 2c during the month to 19½c in drums, carloads. Although the statistical position is quite favorable, as revealed in Dept. of Commerce figures, buyers are likely to be in a favorable position over the balance of the year. Figures for the first 9 months as supplied by the Dept. of Commerce were:

	Pounds	
	1937	1936
Crude, 80% basis—		
Production	129,430,494	111,527,287
Stocks*	15,834,507	10,726,076
Imports	12,698,934	6,793,032
Refined—		
Production	69,925,649	59,282,157
Stocks†	23,883,885	9,469,280
Imports	6,935,459	1,584,234
Dynamite—		
Production	40,060,437	33,820,680
Stocks†	15,874,875	11,050,326

* Preliminary
† Bureau of Census.

September importations of crude and refined glycerin, by countries of origin, were as follows:

	Pounds	
	Refined	Crude
Czechoslovakia	78,287	.....
France	111,527	134,092
Netherlands	44,848	.....
Belgium	.....	22,117
United Kingdom	.....	77,309
Cuba	.....	286,944
Argentina	.....	141,741
Philippine Islands	.....	330,000
Totals	234,662	992,203

Soliciting Borax and Boric Acid Contracts

Producers of boric acid and borax are accepting contracts for the first 6 months of '38 at unchanged prices. An advance in freight rates is a strong possibility and will be for the account of the buyer. Current prices on alcohol have been extended for the coming first quarter. Higher prices are announced for cerium oxalate, U. S. P., and cod liver oil, and lower quotations on No. 1 agar and on menthol. Stocks of the latter in dealers' hands have increased considerably in the past month and there is no longer any immediate fear that spot goods will not be readily available. While no price changes have been made in the tartars for several months, the firm position in the crude material, argols, remains unaltered.

Other price changes of the month include a 5c advance in acetanilid, and a 10c decline in tincture of iodine. A few revisions were also reported in the aromatics. Cinnamic aldehyde in a competitive market was reduced to $1.40-$1.45 per lb., a decline of 15c; diphenyl oxide was quoted at 60c-62c, a 10c reduction; skatol was lower at $75-$80 per lb., the first price change for a long period; indol was down to $32-$34 per lb., a loss of $2 per lb.; and citronellal was quoted at 75c-80c per lb., a decline of 25c.

No price change occurred in camphor. Seasonal demand is only fair. Imports for the first 9 months of '37 and '36 for both natural and synthetic were as follows:

	Pounds	
	1937	1936
Natural, crude	1,688,361	1,769,316
Refined	786,392	750,980
Synthetic	1,523,059	1,560,532

Important Price Changes

	Nov. 30	Oct. 30
ADVANCED		
Acetanilid	$0.30	$0.25
Cerium oxalate, U.S.P.	.35	.28
DECLINED		
Agar No. 1	$1.10	$1.15
Calomel	1.50	1.59
Cinnamic aldehyde	1.40	1.55
Citronellal	.75	1.00
Corrosive sublimate:		
Pwd., gran.	1.15	1.22
Crystals	1.30	1.37
Diphenyl oxide	.60	.70
Glycerin, C.P., drs.	.19½	.21½
Indol	32.00	34.00
Iodine tincture	1.55	1.65
Menthol	3.35	3.40
Mercury metal	83.00	84.50
Mercury oxide, yellow	1.91	2.01
Red precipitate	1.74	1.84
Skatol	75.00	76.00
White precipitate	1.76	1.86

Fischer Honored at Luncheon

William F. Fischer, assistant treasurer, sales manager, and a director of Magnus, Mabee & Reynard, N. Y. City essential oil house, celebrated his 30th year in that business last month. His associates gave him a luncheon at the Drug and Chemical Club on Nov. 17 and President Percy C. Magnus presented an appropriate gift.

Kleber Zone Change

Much discussed Kleber zone change in Clifton, N. J., over which that city's Council has been at odds for two months, was tabled again Nov. 16 when the city fathers decided that Fritzsche Brothers, who take over the old Kleber plant, have not given satisfactory guarantees that they will manufacture nothing except what has been made at the plant in the past. Councilman Godfrey M. Meyer, defending the company, consented finally to one more adjournment.

Mallinckrodt Chemical has developed a new acid bottle closure, called the "New Bell Closure." New development does away with the annoyance of removing plaster and paraffin from bottle necks.

Salesmen Hear McDonough

Quinine was the subject that Francis J. McDonough, president of N. Y. Q., spoke on at the first of the monthly luncheon meetings of the Salesmen's Association of the American Chemical Industry, held at the Chemists' Club, N. Y. City, on Nov. 24.

Mr. McDonough pointed out that while the popular belief was that the use of quinine was declining such is definitely not the case; that actually consumption increases year by year because of the various situations that have developed. For examples, he cited that Russia today is one of the biggest buyers, and that Italy had been forced to buy enormous quantities for its campaign in Ethiopia. He also expressed the opinion that in time Asia will increase its requirements as greater efforts are made to not only control but prevent malaria.

The meeting, the first in a series being arranged by President Charles Lichtenberg, was well attended. Other prominent men in and out of the industry will be heard at future luncheons. The entertainment committee, with "Bart" Sheehan as chairman, has arranged for the annual Christmas Party to be held at the Hotel Pennsylvania this year on Dec. 28, and complete details will be available to the membership shortly.

Naugatuck Employees Dine

The Alembic Association of the Naugatuck Chemical Co. held its 5th annual sports dinner at Hollywood Inn, Ansonia, Conn., on Nov. 11th.

The firms of Bidel & Walden Co. and J. A. Lambert Co. have been merged and are now conducting business as the Minerals Trading Corp., with offices at 17 Battery Place, N. Y. City.

Solvents and Plasticizers

Firmer Tone in Midwest on Petroleum Solvents

Acetone Reduced ½c to 4¾c Basis in Tanks—Natural Methyl Acetone Lowered 1½c—Denaturant Grade Methanol Off 6c Alcohol Schedule Renewed For First Quarter—Solvent Consumption Fails to Improve—

Important Price Changes

	Nov. 30	Oct. 30
ADVANCED		
Cleaners' Naphtha, Group 3, tks.	$0.07⅜	$0.06⅞
Lacquer diluent, Group 3, tks.	.08⅜	.07⅞
Naphtha, V. M. & P., Group 3, tks.	.07⅜	.06⅞
Petroleum thinner, Group 3, tks.	.06⅜	.05⅞
Rubber solvent, Group 3, tks.	.07⅜	.06⅞
Stoddard solvent, Group 3, tks.	.06⅞	.06⅜
DECLINED		
Acetone, tks.	$0.04¾	$0.05
Drs.	.05¾	.06
Alcohol, butyl secondary:		
Tks.	.06	.07
Drs.	.07	.08
Methanol, denat. grd.:		
Tks.	.32	.38
Drs.	.38	.44
Methyl acetone, nat.:		
Drs.	.34½	.36
Tks.	.28½	.30

Heavy Anti-Freeze Shipments

Shipments of anti-freeze into distributing channels so far this season have been at a heavier rate than last. As was the case last year glycerin will play but a small part in the picture due to the price situation. Even at the recently announced price of 19½c for carlots glycerin is not attractively priced for large consumption in the anti-freeze markets and producers have not put forward the sales efforts in this direction that they formerly did. Radiator alcohol prices show little or no change from last year. Ethylene glycol is 25c a gallon higher to the consumer and du Pont is quoting its Zerone in its advertising at one dollar a gallon.

National Carbon which markets Prestone for Carbide is taking special precautions to have its dealers adequately stocked and with larger production facilities now available no shortage is likely to occur. Last year for a short period demand ran in excess of supplies. Owing to higher manufacturing costs the glycol product has been advanced from $2.70 to $2.95 a gallon at retail.

The denatured alcohol schedule as quoted by a leading supplier is 54c per gallon to dealers, east of the Rockies for large drums, 60c per gallon for 5-gailon and 1-gallon cans and 65c per gallon in 1-quart cans. The price to the consumer is unchanged at 25c a quart or $1 a gallon.

Reject A. F. of L. Bid

Commercial Solvents' Peoria plant employees on Nov. 9 voted against granting exclusive bargaining rights to Federal Labor Union No. 20,608, an A. F. of L. affiliate.

Much greater firmness was quite apparent in the Midwest market for petroleum solvents last month. Refiners who had reduced quotations in October reversed their position the middle of November, restoring schedules to former levels. In Chicago fractional increases in tankwagon prices were announced, while in the East firm but unchanged prices prevailed for both tanks and tankwagon deliveries. At the close of the month refiners had not announced prices for the first part of '38.

The highly competitive position of acetone became more acute in the past month with a ½c reduction announced for tank cars and drums, bringing the new price to 4¾c and 5¾c, respectively. This is a record low price. Large increase in productive capacity in the face of restricted consumption are the causes. Increasing demand for butyl alcohol has necessarily meant an increased amount of acetone available, and the producers find difficulty in disposing of these quantities with restricted activity in consuming fields.

Following the decline in acetone, a 1½c reduction in natural methyl acetone was announced, the new schedule being 28½c in tanks and 34½c in drums, carlots. Denaturant grade methanol is down 6c a gal. to 38c in drums, carlots, and 32c in tanks, freight allowed East of the Rockies. Coast prices are in each case 4c per gal. higher. Another important lower price last month was the 1c reduction in secondary butyl alcohol.

Alcohol Unchanged for 1st Quarter

The current price schedule on alcohol has been extended to cover the first quarter of the coming year. Methanol producers are also busy on contract renewals. Large supplies of both methanol and denatured alcohol for anti-freeze purposes have been built up by producers and stocks in the hands of dealers are adequate for immediate consumer needs. Manufacturers are now awaiting cold weather for additional shipments.

Consumption of solvents of all types was disappointing in the past 30 days. Coatings manufacturers have cut production schedules to fit the reduced manufacturing operations in the automotive field. Crude rubber consumption in October amounted to 38,707 long tons, as compared with 43,893 in September and 49,637 in October, last year. The November figure probably will be lower than the October total and December is not expected to show any improvement. Labor troubles flared up again in Akron last month and a 3-day sit-down strike of 12,000 was finally settled when an agreement was reached between Goodyear and the United Rubber Workers Union.

Alcohol, Methanol Production

October ethyl alcohol production was 18,786,200 gals., compared with 22,086,800 a year ago. Output of completely denatured was 7,846,200 gals., compared with 7,793,300 gals. in October of last year. Specially denatured produced totalled 6,523,100 gals., against 7,179,100 in October of '36. Stocks of ethyl alcohol on hand on Oct. 31 amounted to 16,875,700 gals., as compared with 18,842,500 at the same period last year; completely denatured amounted to 709,500 gals. and 1,239,000 gals. last year; specially denatured on hand on Oct. 31 totalled 765,000 gals., against 442,200 at the end of October, 1936.

Packaging Industrial Alcohol

Amendment of its regulations covering cases and bottles for packaging of industrial alcohol has been announced by the Bureau of Internal Revenue.

The amendment to the first paragraph of Article 55 of Regulation 3, as amended, is further amended to read as follows:

"Original packages of alcohol filled at industrial alcohol bonded warehouses may consist of cases containing ½-pint, 1-pint, 1-quart or 1-gallon bottles (liquid measure), as follows: 32 ½-pint bottles, 48 ½-pint bottles, 16 1-pint bottles, 24 1-pint bottles, 12 1-quart bottles, 1 1-gallon bottle, or 3 1-gallon bottles."

Conference Delayed

The conference of industrial alcohol chemists with Treasury Dept. officials to discuss proposals for new alcohol denaturants, originally scheduled for Dec. 1, has been postponed until some time in January. This action was taken to allow chemists in the Bureau of Internal Revenue to complete their tests.

Doherty is Medalist

Henry L. Doherty, president of Cities Service Co., has been awarded the Anthony F. Lucas gold medal by the American Institute of Mining and Metallurgical Engineers.

Kenneth R. Kingsbury, 61, president of Standard Oil of California since '19, died Nov. 22 aboard the Grace liner *Santa Paula* while it was en route through the Panama Canal.

RESIN AND LACQUER PRODUCERS

....Improve your Resins by using "NATIONAL ANILINE"

TOXILIC (MALEIC) ANHYDRIDE

A uniform, white, chemically pure product of increasing importance as a raw material to producers of *quality resins and plasticizers.*

CHEMICAL SPECIFICATIONS

Molecular Weight	**98**
Density	**1.42 at 28° C**
Melting point	**52.6° C**
Boiling point	**202° C**

Solubility—Readily soluble in benzene, hydrocarbons, acetone, ethyl ether and chloroform.

PHTHALIC ANHYDRIDE

A standardized, pure white, flake product from production sources adequate to meet your every demand.

OTHER RELATED CHEMICALS

In addition, the following chemicals are now available in commercial quantities.

Succinic Acid and Anhydride • Malic Acid • Fumaric Acid • Toxilic (Maleic) Acid.

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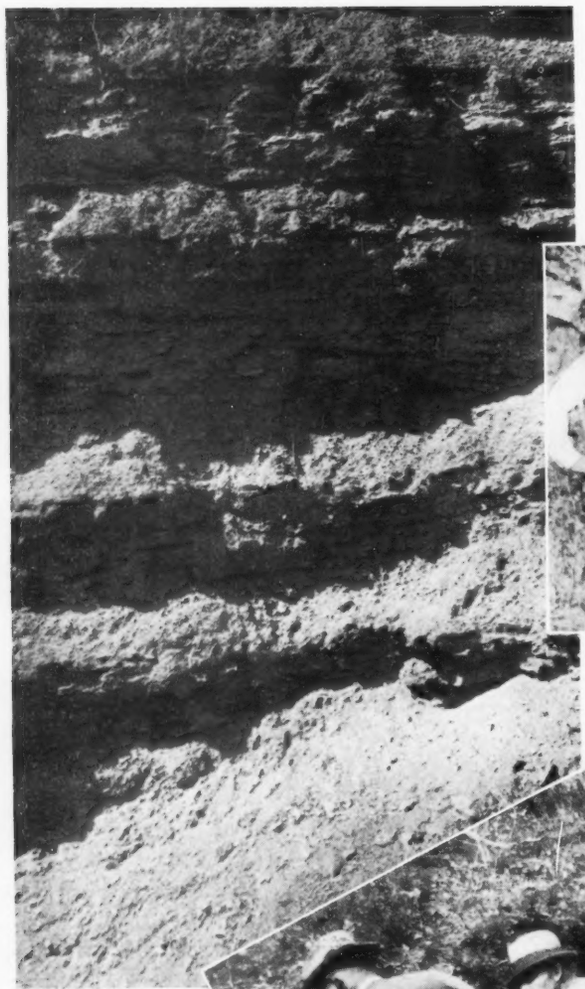
BRANCHES AND DISTRIBUTORS THROUGHOUT THE WORLD

NATIONAL QUALITY

CHEMICAL

The Photographic Record

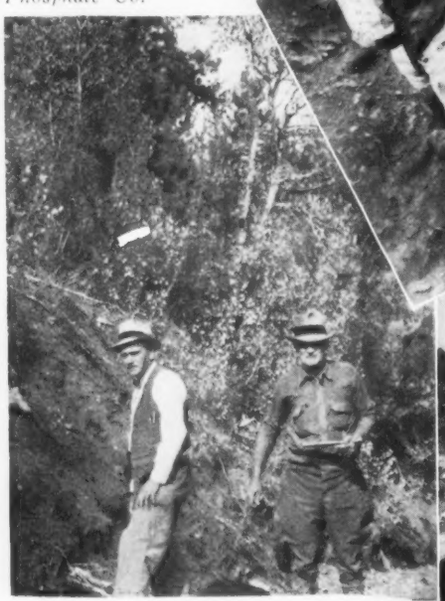
The official party exploring the possibilities of western phosphate fields furnishes this month's news picture prize winner. Photos by G. R. Mansfield, Geologist, U. S. Dept. Interior, and Jesse R. Green, Asst. Prof., Montana State College.



View of phosphate and associated beds near proposed plant site of Humphreys Phosphate Co.

At Phosphora Gulch, Georgetown, Idaho, left to right, Jesse R. Green, Roy M. Butters, Howard P. Sherman, S. H. Knight, P. T. Jenkins (kneeling), O. C. Ralston, K. D. Jacobs, G. R. Mansfield, H. P. Taylor, and Harry A. Curtis.

Party examining phosphate outcrop north of Georgetown, Idaho.

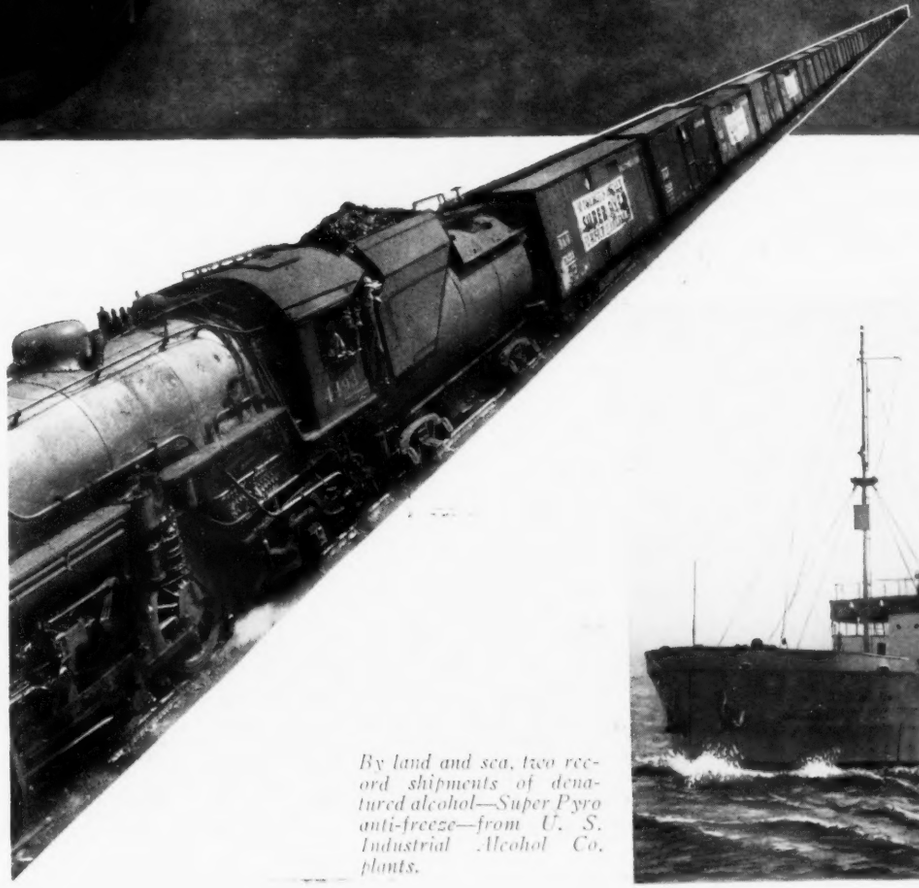


Above, phosphate beds exposed in road cut in Deer Creek, about 12 miles northeast of Georgetown, Idaho. Left, J. Green, and right, R. M. Butters. Right, site where Humphreys Phosphate Co. will build a plant on Brush Creek, 11 miles north of Vernal, Utah.

NEWS REEL

of Our Chemical Activities

The display recently installed in the reception room of the American Agricultural Chemical Company offices, in New York City, shows the diversified line of chemicals handled by the company. See also other view on Chemical Specialties insert.



By land and sea, two record shipments of denatured alcohol—Super Pyro anti-freeze—from U. S. Industrial Alcohol Co. plants.

METHYL ETHYL KETONE

The advent of synthetic Methyl Ethyl Ketone, a material of uniform quality available in commercial quantities, has made it worth while for the chemical industry to investigate this product.

Methyl Ethyl Ketone is being used increasingly as a major solvent in the Lacquer, Resin, Printing Ink, Plastic, Artificial Leather and Chemical Industries. The high purity and low price of M. E. K. should stimulate its use as a raw material for chemical synthesis. It is an excellent solvent for synthetic resins such as Glyptal-type, Amberol-type and Vinyl-type; Ester Gum; Rosin; etc.

It has higher solvent power than other solvents in the same distillation range and gives nitrocellulose solutions of lower viscosities, permitting the use of larger proportions of diluents or higher concentrations of solids. This high solvency and its low weight (6.72 lbs. per gallon) are characteristics which give it considerable advantage over other low boiling solvents. Shell's Methyl Ethyl Ketone is of the highest purity and is absolutely uniform.

OTHER SHELL PRODUCTS

Acetone
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Iso Propyl Alcohol
Iso Propyl Ether
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Methallyl Chloride
Methyl Propyl Ketone
Tri Isobutylene

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Agricultural Chemicals

Fertilizer Outlook for Next Season Uncertain

Rumors of Resale by Mixers Reported in Trade—Concern Felt Over Sulfate Supplies With Steel Below 30% Capacity—Organic Ammoniates Lower—October Tag Sales Below Last Year—Upward Trend in Imports Continues—

No improvement in sales of raw fertilizer materials can be reported in November. Mixers are "up-in-the-air" as to what the coming season will require of tonnages. So far the Administration's farm program has not progressed to the point where prophecies or forecasts can be made. There is a growing tendency on the part of some mixers to fear that they may have over-purchased earlier this year, but as yet very little resale material has appeared.

Possible Spring Shortage of Sulfate?

Some concern is now in evidence about possible supplies of sulfate of ammonia. Steel activity has declined to below 30% of capacity and may cause sulfate output to be smaller than at any time in the past few years. What steel does in the first part of the new year will be watched very closely by fertilizer mixers, for the likelihood of a tight situation in the Spring is thoroughly appreciated.

Additional weakness in the organic ammoniates developed last month. Trading in all items in this group has been very light for weeks. Buyers show no interest even at the record low prices for 1937 now prevailing. A slight pick-up in deliveries of nitrate of soda took place in the north where a few mixers have started operations for the coming season. Considerable interest in the trade has developed in the new 42% urea nitrogen compound now in commercial production by du Pont at Belle, W. Va. The potashes lacked any new features, but suppliers report satisfactory tonnages moving against existing contracts. Equally dull was the market for phosphates. Shipments of superphosphates against contracts have declined somewhat but the price position continues firm and unchanged.

Tag Sales Decline in October

October was the second consecutive month in which sales of fertilizer tax tags in the reporting states were under last year. Sales during the month were also less than for October, 1935. Aggregate sales in the 17 states totalled 146,913 tons for the month, 14% under October '36 and 17% under October '35. The decline was more pronounced in the Midwest than in the South. For the first 10 months of the year total tag sales exceeded the corresponding period of '36 by 23%, with the South experiencing a much larger gain than the Midwest. In each of the past 3 years January-October tag sales represented 66% of the entire year's fertilizer consumption. Applying this ratio to the tag sale figure for this year would give an estimate of total fertilizer consumption of 8,350,000 tons. This is undoubtedly higher, according to the N.F.A., as consumption in other sections of the country has in all probability not risen as much as in the tag sale states. Prior to 1931 tag sales in the January-October period accounted for more than 70% of the year's total.

October tag sales in the South totalled 126,587 tons, as compared with 137,441 in October of '36 and 151,270 in October of '35. The January-October tonnage in the South totals 5,004,251, as compared with 4,032,937 in the corresponding period of last year and 3,750,612 in the same period two years ago. October sales in the Midwest amounted to 20,326 tons, as compared with 32,991 tons in October of '36 and 25,512 in October of '35. The January-October sales in the Midwest for the current year reached 535,125 tons, as compared with 482,718 in the comparative period of last year and 355,754 in '35. The grand total for both sections in the January-October period for '37 totals 5,539,376 tons, as against 4,515,655 in the equivalent period a year ago and 4,106,366 in the corresponding period in '35.

Export-Import Figures

Exports of fertilizers and fertilizer materials in September totalled 125,329 short tons with a stated valuation of $1,549,832. Tonnage was 24% under September a year ago and 46% less than in September 1935. Nitrogenous materials and potash were exported in larger quantity than last year, but phosphate rock exports were much smaller. Total exports for the first 9 months were substantially less than a year ago but slightly above 1935. Ammonium sulfate, phosphate rock, and potash salts exports declined this year.

The upward trend in imports, so pronounced in recent months, continued in September. Totalling 158,753 short tons with a stated valuation of $3,521,249, they were nearly twice as large as last year and 3 times as large as two years ago. The increase over last year was due mainly to larger imports of potash, although some classes of nitrogenous materials were also imported in larger quantity. Imports in the January-September period were at practically the all-time peak level and were 39% above the same period of '36.

Important Price Changes

	Nov. 30	Oct. 30
ADVANCED		
Blood, Chgo.	$3.10	$3.00
Imported, Dec.	3.35	3.25
Fish scrap, grd. Balt.	53.00	51.00
Sardine Meal, Jap., Dec.	46.00	45.00
Tankage, Imp.	3.35	3.15
DECLINED		
Blood, dried, N. Y.	$3.10	$3.25
Hoof meal, Chgo.	3.20	3.40
Nitrogenous material:		
Imp.	2.70	2.75
East	2.70	3.00
Tankage, grd., N. Y.	3.00	3.20
Ungrd., N. Y.	2.80	3.10
Fert. grd., Chgo.	2.75	3.00

'36 World Superphosphate Output

World production of superphosphate during 1936, estimated by the International Superphosphate Manufacturers Association at 15,621,600 metric tons, is highest ever recorded, exceeding the previous high of 1930 by 56,500 metric tons, according to the Commerce Dept.'s Chemical Division. World production of phosphate rock in 1936, according to the same authority was estimated at 11,346,500 metric tons. The '36 production was estimated to contain 3,678,000 tons of phosphoric acid, a gain of 247,000 tons over the '35 figure.

German Potash Shipments

Thanks to Spanish civil war eliminating Spain as a competitor, German potash exports for the first 8 month of this year aggregated 390,325 metric tons of processed potash and 339,838 tons of raw potash salts, attaining record-breaking levels. In corresponding months of '36, Germany exported 154,000 metric tons of processed potash and 281,000 tons of raw potash salts.

Freise Stricken Suddenly

Frederick William Freise, died Nov. 10, at Salisbury, N. C. He was stricken while returning to New York from the Atlanta convention. Mr. Freise spent his life in the fertilizer industry. He began as a bookkeeper at 18 with Lister Fertilizer Works of The A. A. C., at Harrison, N. J. He was with that Company for 11 years, rising to become plant manager. He was next with Swift for 10 years, located both in Harrison, and Chicago. Subsequently he was with Wilson-Martin of Philadelphia for two years as plant and sales manager. In 1922 he joined the staff of American Cyanamid in the capacity of service manager, which position he continued to occupy until his death.

WITH inexpensive oils, fats and fatty acids in great demand, Industrial's large supplies of Liqro and Indusoil are welcome news to users of fats and oils. The Paper Industry is fast becoming an important source of raw materials for users of Fatty Acids, Abietic Acid and Pitch. Industrial Chemical Sales is a pioneer refiner of these products and from its plants at Covington, Va., and Charleston, S. C., can offer large quantities of the following:

LIQRO

A blend of crude pine fatty acids, with the following specifications:

Acid No.	150 to 160
Rosin Acids	40 to 50%
Fatty Acids	35 to 45%
Sterols	15 to 20%

This material is available in large quantities both from our Covington, Va., mill and our new mill at Charleston, S. C.

Indicated uses are for asphalt emulsions, cutting oils, low priced soaps, and many other applications where a low price fat is a requirement.

Present prices on contract F.O.B. Charleston, S. C.

Tank Cars —$35.00 per ton
Carloads, in drums—$45.00 per ton

Large samples and specific data available on request.

INDUSOIL

A blend of refined fatty acids, with the following specifications:

AVERAGE QUALITY OF INDUSOIL

Specific Gravity 60°/60° F.	0.96-0.98
Pour Point	47° F.-52° F.
Viscosity (Saybolt)	
@ 100° F.	700-900 Sec.
@ 210° F.	70-80 Sec.
Flash Point	350-380° F.
Fire Point	410-430° F.
Sediment	None
Moisture	Practically None
Ash	Practically None
Completely Soluble in Petroleum Ether	
Acid No.	150-170
Saponification Value	150-170
Color (Rosin Scale)	G-I
Fatty Acid	43-47%
Rosin Acids	38-42%
Sterols	13-17%

Excellent as a blend with red oil for textile soaps and can be used with red oil for most other applications required of red oil, including cutting oils, drawing compounds, soluble oils, pine scrubs, etc.

PITCH

A new type pine fatty acid pitch, available from the distillation of Liqro, resulting in a pitch of excellent color and with a melting point of 85° to 95° F.

ABIETIC ACID

A distilled product, excellent in color and meeting the following requirements:

Acid No.	176-185
Saponification No.	176-185
Iodine No.	150 to 170
Color (Rosin Scale)	N (Opaque)
Melting Point	230° F. to 250° F.

Samples, Specific Data, and Additional Information can be secured by writing

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Bearish Tone in Fats and Oils Markets

Purchasing Light—Spot Chinawood Prices Again Reduced—October Cottonseed Oil Consumption Greatest on Record—Linseed Declines—Soybean Steady—Huge Increase in '37 Vegetable Oil Output Forecast—

Oils and fats during November proved no exception and declines far outnumbered advances. A fair business was placed at times, but by far and large, purchasing was light and buyers showed no inclination to make future commitments. The uncertainties in Washington strengthened the bearish attitude. The proposed farm measure directly affects the outlook in oils and until the bill is finally passed, modified, or shelved, it is impossible to do intelligent forecasting.

Despite little demand spot stocks of Chinawood declined for the second month from the former high level reached when hostilities broke out in China. Offers of resale oil were reported in the market at 14½c-15c, with very little being taken. Some offerings at 14c for shipment from Hongkong were reported to have been made, but how much is actually available for immediate shipment is not definitely known. It is reported that 4,055 tons moved out of Hankow in October, of which 3,339 tons went directly to the U. S. The weakness in Chinawood was reflected in lower quotations on oiticica and perilla.

An easy tone in coconut must be reported with offerings at 4c. Copra quotations were shaded. Corn oil was lowered in sympathy with the decline in grain. Soybean, on the other hand, held steady with buyers showing fair interest. Lard went lower, largely on the belief that hogs are more plentiful, and tallow was easier when offerings increased substantially. Greases also moved lower. All grades of stearic acid were off ½c, caused by an easier tone in the market for the basic material. Competition in red oil has been rather severe for several months and little surprise was in evidence when the market was slashed ¾c per lb.

Light Trading in Linseed

The general indifference of buyers and bearish news in the building trades were reflected in a linseed decline. Boiled in tanks was quoted at 10.2c and raw at 9.8c with very little actual trading. Some inquiries for deliveries after the turn of the year were noted in the Minneapolis market, but these were largely "feelers," not to be viewed seriously.

Larger '37 Vegetable Oil Yield

Estimated increase of 500 million lbs. production of major vegetable oils from 1937 crops compared with last year was reported Nov. 15 by the Bureau of Agricultural Economics. The oils include cottonseed, soybean, corn and peanut. Increased production is based on a cottonseed supply about 47% larger than in 1936-37, and an expected increase of 20% or more in the production of soybean oil.

Prospective increase in production of vegetable food oils follows an increase of about 200 million lbs. in 1936-37 compared with the preceding year. Stocks of cottonseed, corn, soybean and peanut oils as of Sept. 30, 1937, were reported "a little over 100 million lbs. more than on the corresponding date last year."

Confused Outlook in Cottonseed

Cottonseed oil moved lower during the past month, but considering the generally sharp declines in other commodities the losses were not great. A comparison of prices on bleachable prime summer yellow oil futures on Oct. 29 and Nov. 26 is given below:

	Nov. 26 Close	Oct. 29 Close
January	7.06 sale	7.25-7.27
March	7.06 sale	7.28-7.29
May	7.11 sale	7.34 sale
December	7.00-7.05	7.23-7.26

Undoubted reason for the comparative steadiness in cottonseed oil was a record consumption of 484,633 barrels, reported for October, and the highest ever recorded. Consumption for the August-October quarter totalled 1,200,000 barrels, a larger amount than in either 1928 or 1929, when consumption for the whole was over 3,600,000 barrels. Production of oil this season is estimated between 4,100,000 and 4,300,000 barrels, with some even suggesting 4,600,000 barrels. Farmers are expected, however, to use considerable seed for home-made fertilizer, and it is expected that yields per ton will be rather low. Farmers are said to be holding back seed so that mills have little oil to sell. As to the future trend the uncertainties in the picture are too great for accurate forecasting. Will lard yields be greater or less? Will lard be more plentiful? At what price will the Government start supporting the price structure with purchasing? These and other factors are highly confusing at the moment. Perhaps a better picture can be had when the cotton crop control plans are in final form.

Armour Plant for Houston

Armour, Chicago, has acquired a site in Houston, Texas, for a packing plant and vegetable oil refinery, and has entered into a contract with the municipality for waste disposal. Construction date has not been set nor have plans been completely drawn for the works. Company has another plant at Fort Worth.

Important Price Changes

	Nov. 30	Oct. 30
ADVANCED		
Acid myristic, drs.	$0.15½	$0.14¼
Peanut, crude, tks.	.06⅞	.06½
Sardine, Pac. Coast, tks.	.37	.35
DECLINED		
Babassu, tks.	$0.07¼	$0.07½
Chinawood, drs., N. Y.	.14½	.18
Tks., spot	.14½	.18
Coconut, edible, bbls.	.09½	.10½
Manila, tks., N. Y.	.04	.04½
Tks., Pac. Coast	.03⅞	.04⅜
Copra	.0235	.0260
Corn, crude, tks.	.06½	.07
Refd., bbls.	.09½	.09¾
Greases, yellow	.04⅞	.05⅛
Lard Oil, edible prime	.14	.15
Extra	.11¼	.11¾
Extra No. 1	.09¼	.10½
Linseed, tks., raw	.098	.104
Neatsfoot, cold pressed	.16¾	.17¼
Extra	.09¾	.10¾
Oiticica, bbls.	.14	.17
Oleo No. 1	.12½	.13
No. 2	.12	.12¼
Olive Oil foots	.09¾	.10¼
Palm, Kernel, bulk	.04½	.05
Niger	.04	.04½
Peanut, refd., bbls.	.10¼	.10½
Perilla, drs.	.12	.13¼
Tks., coast	.11¼	.12¾
Red, distilled, bbls.	.09⅝	.10⅜
Tks.	.08¾	.09¼
Stearic Acid:		
Double pressed dist.	.11	.11¼
Double pressed sap.	.11¼	.11¾
Triple pressed	.14	.14¼
Stearine, Oleo	.08½	.09¼
Tallow, extra loose	.06¼	.06⅝

Flaxseed Situation Analyzed

Increase in world flaxseed supplies is expected in 1938-39 over the short supplies of 1937-38, with bigger production partially offset by a small-carry-over of old seed on Aug. 1, 1938, the Bureau of Agricultural Economics stated last month in its annual outlook report. About the same world demand for flaxseed and flaxseed products was reported in prospect in 1938 as in 1937.

Since the low point of 1932, utilization of drying oils in the U. S. has increased steadily, but up to the end of 1936 the percentage that linseed oil contributed to the total use dropped from 77 to 61%. Since the beginning of 1937 both the percentage and the actual amount of linseed oil consumed has increased rapidly. Changes in price relationships in 1937 between linseed oil and other drying oils will, while maintained, tend to place linseed oil in a more favorable position relative to other drying oils.

World demand early in the 1937-38 marketing season has been slightly stronger than during the first months of the 1936-37 season. The Bureau reports some lowering of present levels of demand likely during the next few months, but that prospective short crops in Argentina (harvest begins Dec.) may become more of a price factor as the season advances. It must be added, however, that late cables report very favorably on Argentine weather conditions and private estimates are, as a result, being revised upwards.

Pigments and Fillers

Important Price Changes

	Nov. 30	Oct. 30
ADVANCED		
Tripoli, airfloated	$26.00	$25.00
DECLINED		
Casein, 20-30	$0.12	$0.12½
80-100	.12½	.13
Lead, metal, N. Y.	5.00	5.50
Litharge	.06½	.08
Mercury oxide, red tech.	1.49	1.59
Yellow	1.39	1.49
Orange mineral	.10¾	.11½
Red lead 95%	.07½	.08
97%	.07¾	.08¼
98%	.08	.08½
Red vermilion	1.60	1.65
Rosin oil, 1st run	.54	.56
2nd run	.56	.58
3rd run	.60	.62
Tripoli, single grd.	14.50	15.00
Double grd.	16.00	17.00
Zinc, metal, N. Y.	5.60	6.10
E. St. L.	5.25	5.75

New Carbon Black Laboratory

Printing ink manufacturers in the N. Y. Metropolitan area sat in a round table discussion of their problems with the researchers at Columbian Carbon Co.'s new carbon laboratory on Nov. 16. Preceding the discussion, visitors were shown the various divisions of the recently opened laboratory. The printing ink seminar was first of a series to cover the principal uses of colloidal carbon, according to W. B. Wiegand, Columbian's director of carbon research. Subsequent pow-wows with representative companies will be devoted to rubber, paint, plastics, paper and other industries.

Paint Styling Meeting

Horace S. Felton, chairman of the Council for Paint Styling, sets Dec. 15 for a meeting of the Council in N. Y. City at the Pennsylvania Hotel, 10:30 A. M. Secretary Laurence Kiefer, under date of Nov. 23, wrote members that this meeting will be the 1st held since the Council received the approval of the National Paint, Varnish and Lacquer Association, at its '37 Convention in Cincinnati, to proceed promptly with the styling program.

Euston Lead Expands

Euston Lead, Scranton, Pa., has enlarged plant facilities and now produces 12,000 tons of white lead annually against 8,000 tons.

Devoe & Raynolds to Move

Devoe & Raynolds, 184-year-old paint firm, will move its downtown retail store from Fulton and William streets, N. Y. City, where it has been located for seventy-three years, to 110 Fulton street. Eighty-six years ago the company occupied a store on the site of its present location.

Competition in Carbon Black Acute

Three Separate Declines Announced in November—Lead Pigments Lower—Zinc Oxide, Lithopone, and Titanium Pigment Prices Renewed for First Quarter of '38—Ester Gum Off ½c—Tripoli Price Schedule Readjusted—Mercury Oxides Lower—

Severe competition in carbon black was easily the feature of the raw paint materials markets last month. Three distinct price reductions were reported in the 30-day period. The last decline brought the price a full cent below that which prevailed for 4 years without change. Current quotations are retroactive to Nov. 1st, and producers are actively soliciting contracts. Increased productive capacity in the past year, with a distinct slump in the rubber, paint, and other fields, are compelling reasons for the situation. Prices on the lowest grades at the turn of the month were quoted as follows:—Carlots delivered by rail, Zone A, 3.45c; Zone B, 3¾c; Zone C (50,000 lbs.), 3.90c; Zone C (30,000 lbs.), 4.05c; Zone D, 3.90c; Zone E, 4.05c; Zone F, 4.35c; and Zone G, 4.55c. A new bulk tankcar price has been established at ¼c less than the carlot bag prices. Severe price recessions are also reported in the special grades of carbon black and in the general l.c.l. price structure.

Lead Pigments at '37 Lows

Lead at much lower levels has forced several price adjustments in lead pigments and currently they are at low points for '37.

Other Price Changes of the Month

One leading supplier of aluminum powder and paste has withdrawn quotations for the moment, but the move was not generally followed by other producers. Casein has again been reduced. Light demand and increasing supplies are the causes and as the month closed 20-30 material was quoted at 12c, while 80-100 material was ½c higher.

Zinc Oxide Prices Renewed for 1st Quarter

Producers of zinc oxides and lithopone are soliciting contracts for the first quarter of '38 at unchanged prices as are manufacturers of titanium pigments. Zinc metal has moved into a new low price zone, but the pigments are not as closely attuned to the ups and downs of the metal as in the case of lead.

Tripoli Schedule Revamped

Several changes have been instituted in Tripoli prices for '38. Sellers are offering 90-day contracts as follows:—Airfloats, $26.00 per ton; once-ground, $14.50; double ground, $16.00. These prices are carload quotations, f.o.b. sellers' works, and represent a dollar advance in airfloated, a dollar decline in double ground, and a 50c reduction in single ground.

Steady decline of metallic mercury has brought red vermilion to $1.60, and a 10c loss in red and yellow mercury oxides, current markets for the latter being $1.49 per lb. for red and $1.39 for yellow.

Producers of ester gum announced early in the month a ½c decline, bringing the current market down to 9½c in carlots. However, producers have not, as the month closed, released quotations for contract business for the first quarter of '38, and the reason for the hesitancy is said to be the question of possibly higher freight rates on their raw materials.

Coatings Production Down Sharply

Activity in coatings has been disappointing. Consumer resistance to higher prices has been developing in motor car sales. Earlier estimates placed the November automotive output at about last year's total of 405,799 units, but it is now believed that production was below the 400,000 mark. Ford production is late in getting under way, but should make itself felt in December. It is very difficult to estimate the possible December output. Some producers will drop to 4 and even 3-day weeks and others plan to shut down from Christmas through New Year's Day.

Large Foreign Demand for Carbon Black

Exports of chemical pigments have been heavy this year due largely to better demand for carbon black. Total foreign shipments in the 1st 9 months reached 164 million lbs. valued at $8,743,500 against 128 million lbs. with a value of $6,845,000 in the same months of '36 of which carbon black increased from 109 to 140 million lbs.

Exports of mineral earth pigments declined considerably in quantity in the 1st 9 months of the year—27 million lbs. being shipped against 45 million in the 1st three quarters of '36—but the value received increased from $443,250 to $491,000.

To Deal With Union

The National Labor Relations Board Nov. 1 ordered the Carbola Chemical Co., Natural Bridge, N. Y., to begin collective bargaining with a local of the Talc Workers' Union and to reinstate one employee with back pay. Company had agreed to these moves at a board hearing at Carthage, N. Y., on Oct. 14.

Natural Raw Materials

Corn Derivatives Drastically Reduced

Two Declines of 20c Each in Dextrin and Starch Announced —Natural Tanning Materials Firm—Candelilla Down 1c—Shellac Market Competitive—Rosin Prices Slump To New Lows For Year—

Severe, prolonged declines in corn forced producers of corn derivatives to rearrange price schedules drastically on two occasions last month, each decline amounting to 20c on starch and dextrin. As the month closed British gum dextrin was quoted at $3.90 f.o.b. Chicago, corn canary at $3.55, and white at $3.60. Pearl starch closed out the month at $3.08 and powdered at $3.18. In each case these prices represent new lows for the current year. Reductions were placed in effect on tanners' corn sugar, bringing the price down to $3.30, and on corn syrup the latest quotations were $3.26 for 42° and $3.31 for 43°.

Egg Prices Nominal

Quotations on egg products continue nominal in view of the current situation in China. Present demand from consumers is extremely light, but there is no indication when material can be shipped here with any certainty. The market for natural tanning materials is distinctly firm although little business is momentarily being consummated. It might almost be said that the whole current market is nominal. No price changes of importance were made last month. Cables from primary sources are firm in tone, however, and dealers are content to hold stocks, feeling that any resumption in demand after the turn of the year will find the replacement market bullish.

Bone Dry Shellac Off ½c

A ½c decline in bone dry shellac took place early in November, but the balance of the schedule remained unchanged. Dullness still characterizes the demand and what business does exist is fought for very competitively. This situation has become more aggravated than ever and consumers are holding to hand-to-mouth purchasing because of it.

Few Price Changes in Varnish Gums

Few price shifts took place in the natural varnish gums. No. 1 Singapore dammar was reduced ½c to 21½c in carlots, and bold black scraped East India gum is now offered at ¼c below recent quotations, establishing the new price in carlots at 65⅝c. Weakness developed in all grades of Arabic. In general, consumers of the various gums, as well as importers, are marking time between "the devil and the deep-blue sea," not knowing whether manufacturing operations are likely to go still lower or whether an upturn will take place with the new year. Improvement, they fear, will raise replacement costs pretty rapidly.

For the second month in succession rosin took the spotlight from turpentine. Rosin prices cracked wide open again and the losses sustained almost equalled in the lower grades the sensational declines in October. Turpentine, on the other hand, held its own and gained a ½c when comparison is made of prices on Oct. 29 and Nov. 26. It is difficult to put a finger on the exact cause or causes for the sharp and prolonged decline in naval stores, except that it closely parallels the stock market and most other commodity markets. Uncertainty does exist as to where naval stores will be in any new farm program instituted by the Administration and the threat of further liquidation of Government-held stocks is always present.

Fair inquiry from foreign buyers was reported at the newly established low price levels in primary centers, but very little new business is said to have been placed. Withdrawals against existing commitments were rather large. In general, the statistical picture improved somewhat in November. Rosin stocks at Savannah dropped, but increased a little in Jacksonville and were slightly greater at Pensacola. A big decline was reported in turpentine stocks at Jacksonville, a smaller loss was noted at Savannah, but a small increase took place at Pensacola. A comparison of the naval stores markets as of Oct. 29 and Nov. 26 is given below:

	Nov. 26	Oct. 29	Net Gain or Loss for month
Savannah:			
B	$5.15	$6.25	—$1.10
D	5.15	6.25	— 1.10
E	5.15	6.50	— 1.35
F	5.65	6.50	— .85
G	5.65	6.50	— .85
H	5.70	6.50	— .80
I	5.70	6.50	— .80
K	5.70	6.60	— .90
M	5.80	6.60	— .80
N	5.85	6.65	— .80
WG	6.40	6.85	— .45
WW	6.75	7.00	— .25
X	6.75	7.00	— .25
Stocks	82,329	86,441	—4,112
Turpentine	27c	26½c	+ ½c
Stocks	37,393	39,672	—2,279
Jacksonville:			
Rosin stocks	51,811	51,072	+ 739
Turpentine	16,905	31,859	—14,954
Pensacola:			
Rosin stocks	28,101 (Nov. 20)	26,256 (Oct. 23)	+1,845
Turpentine	26,713 (Nov. 20)	25,385 (Oct. 23)	+1,328

The W. C. Hardesty Co. reports removal of its Wilmington plant and Long Beach offices to the new location at 5636 E. 61st st., Los Angeles, Calif.

Important Price Changes

	Nov. 30	Oct. 30
ADVANCED		
Carnauba No. 3 N. C.	$0.35½	$0.35
DECLINED		
Arabic, amber sorts	$0.11¾	$0.12
White sorts	.24	.25
No. 2	.22	.23
Powdered	.15	.16
Beeswax, Yellow African	.25½	.26
Candelilla	.14	.15
Carnauba No. 1 Yellow	.44	.44½
No. 2 Yellow	.43	.43½
No. 3 chalky	.34½	.35
Corn Sugar, tanners'	3.30	3.50
Corn syrup 42°	3.26	3.61
43°	3.31	3.66
Dextrin, corn	3.55	3.95
British gum	3.90	4.30
Shellac, bone dry	.17	.17½
Singapore No. 1	.21½	.22
Starch, corn, pearl	3.08	3.48
Powdered	3.18	3.58

Light Trading in Waxes

Waxes were relatively quiet during the past 30 days. Some weakness developed in Candelilla and quotations sank to 14c. All grades of Carnauba were quoted somewhat lower with the one exception of No. 3 North Country. Carnauba crop conditions this past season were excellent in most sections of Brazil's production area, owing to the protracted drought which occurred in '36 favoring the formation of the wax on the carnauba palm. As a result, the available supply of wax this year is larger than in recent years. No accurate statistics are obtainable as to current or prospective harvest although official sources place it around 10,000 tons. Exports of carnauba from Brazil during the 1st 8 months of '37 totaled 6,029 metric tons, higher than any similar period in a number of years, according to statistics released by the Chemical Division, Bureau of Foreign & Domestic Commerce. Japan was steady and unchanged in price despite a noticeable let-down in demand.

Chemistry Dramatized

Highlights of the American Chemical Industry were featured in the Commerce Dept.'s regular weekly radio program on Dec. 7 during which the discoveries of Dr. L. H. Baekeland in connection with synthetic resins were dramatized. Following the episode, Dr. Baekeland spoke briefly over a coast-to-coast network. Program, 8th in a series, dramatized chemical and allied products industries.

Harold M. Johnson resigns as vice-president in charge of eastern sales for Beck, Koller, synthetic resin manufacturer in Detroit, and will open sales offices in Newark, Jan. 1, specializing in the sale of raw materials used in coatings industries.

Stocks and Bonds

Stocks Decline For Fourth Consecutive Month

Hercules Splits Common Two for One—Many Year-End Dividend Announcements Released—du Pont Pays $2, Same As a Year Ago—Cuban-American Manganese Declares 20c on 8% Class A Preferred—

Dividends and Dates

Name	Div.	Stock Record	Payable
Abbott Labs., ext.	10c	Dec. 16	Dec. 29
Abbott Labs., q	40c	Dec. 16	Dec. 29
Archer-Daniels-Midland	50c	Nov. 20	Dec. 1
Atlas Powder	75c	Nov. 30	Dec. 10
Carman & Co., Cl. A, ac	50c	Nov. 15	Dec. 1
Clorox Chem., q	75c	Dec. 13	Dec. 23
Colgate-Palmolive-Peet, q	12½c	Dec. 6	Dec. 24
Columbian Carbon, sp.	75c	Nov. 19	Dec. 10
Columbian Carbon, q	$1.00	Nov. 19	Dec. 10
Compressed Ind. Gases, q	50c	Nov. 30	Dec. 15
Cuban-Am. Mang. 8% pf. A ac	20c	Dec. 10	Dec. 20
du Pont, yr.-end	$2.00	Nov. 22	Dec. 14
du Pont, deb. stk., q	$1.50	Jan. 10	Jan. 25
Eagle Picher Lead	10c	Dec. 8	Dec. 20
Eagle Picher Lead, pf., q	$1.50	Dec. 15	Jan. 2
Fansteel Metallurgical, $5 pf., q	$1.25	Dec. 15	Dec. 17
Freeport Sulphur, q	50c	Nov. 15	Dec. 1
Freeport Sulphur, pf., q	$1.50	Jan. 13	Feb. 1
Great Western Electro	$1.40	Dec. 4	Dec. 15
Great Western Electro, pf., q	30c	.....	Jan. 1
Hercules Powder, *a*	stk.	Nov. 12	Nov. 23
Hercules Powder (new), yr.-end	75c	Dec. 10	Dec. 21
Heyden Chem., q	50c	Nov. 15	Dec. 1
Intern. Salt, ext.	....	Dec. 1	Dec. 15
Intern. Salt, q	37½c	Dec. 1	Dec. 15
Leslie Salt, q	50c	Dec. 1	Dec. 15
Lindsay Light & Chem., pf., q	17½c	Dec. 4	Dec. 13
Mathieson Alk. Wks., yr.-end	52½c	Dec. 1	Dec. 23
Mathieson Alk. Wks., pf., q	$1.75	Dec. 1	Dec. 23
Monroe Chem.	50c	Dec. 14	Dec. 24
Monroe Chem., pf.	87½c	Dec. 14	Jan. 1
Monsanto Chem., q	50c	Nov. 24	Dec. 15
Monsanto Chem., sp.	$1.00	Dec. 1	Dec. 22
Monsanto Chem., $4.50 pf.‡	$1.64	Nov. 10	Dec. 1
National Lead, pf. B, q	$1.50	Jan. 21	Feb. 1
National Lead, pf. A, q	$1.75	Nov. 26	Dec. 15
Nat. Oil Products**	$1.00	Nov. 26	Dec. 10
N. J. Zinc Co.	$1.00	Nov. 20	Dec. 10
Penick & Ford	25c	Dec. 1	Dec. 15
Penn Salt Mfg. Co.	$3.00	Nov. 30	Dec. 15
Procter & Gamble, 5% pf., q	$1.25	Nov. 24	Dec. 15
Sherwin-Williams, pf., q	$1.25	Nov. 15	Dec. 1
Sherwin-Williams, of Can., pf. ac.	$1.75	Dec. 15	Jan. 3
Spencer Kellogg, q	40c	Dec. 15	Dec. 31
Staley Mfg., $5 pf., q	$1.25	Dec. 10	Dec. 20
Staley Mfg., 7% pf. *s*	$3.50	Dec. 20	Jan. 1
Texas Gulf Sulphur, ext.	50c	Dec. 1	Dec. 15
Texas Gulf Sulphur	50c	Dec. 1	Dec. 15
Union Carbide	80c	Dec. 3	Jan. 1
United Carbon, q	$1.00	Dec. 1	Dec. 15
United Dyewood, q	25c	Dec. 10	Jan. 3
United Dyewood, pf., q	$1.75	Dec. 10	Jan. 3
Westvaco Chlorine Prod., q	25c	Nov. 10	Dec. 1

a One additional share of common stock for each share held. N. Y. Stock Exchange rules ex-distribution Nov. 24.

** Optional payment 1-20th share of common each share held.

s Semi-annual.

‡ Represents proportion of the semi-annual dividend for the unexpired period ending Dec. 1.

Trend of prices in November on the N. Y. Stock Exchange was downward for the 4th consecutive month and on Nov. 24 stocks touched the lowest level since early April, '35. Trading for the month was lighter in volume than in October, sales amounting to 29,264,906 shares, compared with 51,093,381 October and 48,605,047 November, '36.

Discouraging news outweighed good news last month. All indices of business show conclusively that the decline in business activity has been quite severe and may not be just a mere recession or periodic "breathing-spell."

On the favorable side must be listed a better feeling on the political situation. The President has approached the utilities and at the moment a truce is quite possible. Mr. Roosevelt has also indicated that new tax legislation is highly desirable. But what is, perhaps, of greatest importance, he has taken a more definite stand on the question of balancing the budget.

In common with the general trend in the market chemical stocks declined rather severely in November although the losses sustained were not quite as heavy as in October.

Hercules Splits Stock

Stockholders of Hercules Powder, at a special meeting on Nov. 4, approved split up of the company's common stock into twice as many shares. Split up was effected by issuing on Nov. 23, to each stockholder of record at the close of business on Nov. 12, one additional share of common stock for each share held on the record date.

Special Dividend News

American Agricultural Chemical has declared a dividend of $1.25 a share, bringing the total payments for this calendar year to $7.75. Company's fiscal year began on July 1 and since then a dividend of $4 was paid on Sept. 30th.

A dividend of $2 a share on the common stock of American Potash and Chemical was voted by directors recently. This compares with $1.50 a share paid in June and with $1.25 disbursed a year ago.

At the regular meeting of the board of directors of Hercules Powder on Nov. 24 a year end dividend of 75c a share was declared on the 1,310,958 shares of common stock of the company outstanding after giving effect to the split-up of two for one which was voted by stockholders on Nov. 4. This dividend is payable Dec. 21 to stockholders of record Dec. 10.

Du Pont Again Pays $2

Du Pont directors have declared a dividend of $2 a share on the common, payable on Dec. 14 to stock of record of Nov. 22. A similar year-end dividend was paid on Dec. 15 last. Action taken brings distributions voted for '37 to $6.25 a share, compared with $6.10 paid in '36.

20c For Cuban-American Manganese

Directors of Cuban-American Manganese Corp., subsidiary of Freeport Sulphur Co., have declared a dividend of 20c a share on the 8% Class A Cumulative Preferred stock, payable Dec. 20, to stockholders of record Dec. 10, covering arrears on this class of stock for the 5 quarters following issuance of the stock and ending Oct. 15, '34. At the same time, consolidated net income of $185,818 was reported for the 9 months ending Sept. 30, 1937, after depreciation, depletion, federal and Cuban taxes. These net earnings compare with a consolidated net loss of $174,920 for the corresponding period of '36.

Vanadium Corp. of America has resumed payment of dividends with the declaration of $1 a share. Last previous dividend was 75c, paid on Feb. 16, '31.

Texas Gulf Sulphur directors have declared an extra dividend of 50c a share plus a dividend of 50c. A 50c dividend was disbursed on Sept. 15.

Price Trend of Chemical Company Stocks

	Oct. 30	Nov. 5	Nov. 12	Nov. 19	Nov. 26	Nov. 30	Net Gain or loss last mo.	Price on Nov. 30, 1936	1937 High	1937 Low
Air Reduction	57¼	50	52	48	47¾	50	— 7¼	82	80¼	44¼
Allied Chemical	163¾	159	168	152½	151¾	155½	— 8¼	238	258½	145
Columbian Carbon	.....	81	83	75	70	73	.....	120	125¾	65
Commercial Solvents	9⅛	8½	9	8⅛	8⅞	9⅛	.....	16½	21¼	5
du Pont	125¾	118	123	108⅜	102⅝	112	—13¾	181¼	180⅛	98
Mathieson Alkali	25¼	25	25½	24¼	24	24¾	— ½	41½	41¾	22½
Monsanto Chemical	86	83	83¾	76	74	76	—10	99½	107½	71
Std. of N. J.	53½	50¾	49⅝	45	43⅝	45	— 8½	65⅞	76	42
Texas Gulf Sulphur	32½	30	30¼	30	29½	30⅜	— 2⅛	41⅛	44	23¾
Union Carbide	80	76	75½	64⅞	66½	71	— 9	103¼	111	61¼
U. S. Ind. Alcohol	21¾	19¾	20⅜	19⅛	20	20¾	— 1	40	43⅝	16⅛

CHEMICALS FOR INDUSTRY

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Chromium
Copper
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Sodium
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Additional Dividend Reports

Earnings Statements of United Carbon and Columbian Carbon Report Favorable 9-Months Ending—

Report of United Carbon and subsidiaries for 9 months ended Sept. 30, shows net profit of $1,917,108 after charges, depreciation, depletion and normal federal and state income taxes, but before surtax on undistributed profits, equal to $4.82 a share on 397,885 shares of common. This compares with $1,574,965 or $3.96 a share for the 9 months ended Sept. 30, '36.

For quarter ended Sept. 30, '37, net profit was $551,740 equal to $1.39 a share, comparing with $643,000 or $1.62 a share in preceding quarter, and $487,358 or $1.22 a share in September quarter of previous year.

Columbian Carbon Net Higher

Report of Columbian Carbon and subsidiaries for 9 months ended Sept. 30, subject to year-end adjustment, shows net income of $3,686,067, including $263,408 profit on sales of securities, and after deducting federal income taxes, depreciation, depletion and minority interests, equivalent to $6.85 a share on 537,406 no-par shares of capital stock, excluding 1,014 shares in treasury. No provision was made for federal surtax on undistributed profits. This compares with $2,654,104 or $4.94 a share on 537,411 shares for the 9 months ended Sept. 30, '36.

For quarter ended Sept. 30, '37, indicated net income, based on a comparison of company's reports for the 6 and 9 months periods, was $1,165,381, equal to $2.17 a share, comparing with $1,072,150 or $1.99 a share in preceding quarter and $810,799 or $1.51 a share in September quarter of previous year.

Koppers Reports $18.83 a Share

Report of Koppers Co. and wholly-owned subsidiaries for 12 months ended Sept. 30, subject to annual audit and adjustments, shows net profit of $3,083,552 after depreciation, depletion, amortization, interest, federal income taxes, etc., but before any provision for federal surtax on undistributed profits, equivalent after 6% preferred dividends, to $18.83 a share on 100,000 shares of common stock. All common stock is owned by Koppers Associates, Inc.

Great Western $1.56 a Share

Great Western Electrochemical reports for quarter ended Sept. 30 net income $137,346 or $1.56 a common share. For 6 months ended June 30 net income $248,842, or $2.76 a share. For 9 months ended Sept. 30 net profit $386,188, or $4.32 a share.

United Chemicals Reports Profit

United Chemicals, Inc., and subsidiaries report for 9 months ended Sept. 30, net profit of $69,637 after taxes, depreciation, etc., comparing with net loss of $26,971 for the 9 months ended Sept. 30, '36. For quarter ended Sept. 30, indicated net profit, based on a comparison of company's reports for the 6 and 9 months periods, was $24,584, comparing with net profit of $23,803 in preceding quarter and net loss of $15,304 in September quarter of previous year.

A-D-M Nets $358,450 for Quarter

Archer-Daniels-Midland Co. reports for quarter ended Sept. 30, net profit of $358,450 after depreciation, federal income taxes, etc., but before surtax on undistributed profits, equivalent after dividend requirements on 7% preferred stock, to 56c a share on 549,546 no-par shares of common. This compares with $523,444 or 85c a share on common in September quarter of previous year.

Climax $2.12 a Share

A net profit of $5,338,187 for the 1st 9 months of this year is reported by Climax Molybdenum and subsidiaries, after deductions for depreciation, obsolescence, depletion and provision for Federal income and excess profits taxes, but before surtax on undistributed income. Based on the 2,520,000 shares of no-par capital stock outstanding, the net profit is equivalent to $2.12 a share.

Earnings Statements Summarized

Company:	Annual dividends	Net income 1937	Net income 1936	Common share earnings 1937	Common share earnings 1936	Surplus after dividends 1937	Surplus after dividends 1936
Abbott Laboratories:							
††Sept. 30 quarter	§$1.60	$462,245	.....	$.72	....	.....	.....
Nine months, Sept. 30	$1.60	1,327,580	*.....	2.07	....	.....	.....
American Commercial Alcohol:							
Sept. 30 quarter	....	262,991	$120,787	1.01	$.46	.....	.....
Nine months, Sept. 30	....	659,229	449,813	2.53	1.72	.....	.....
Archer-Daniels-Midland:							
Sept. 30 quarter	$2.00	358,450	523,444	.56	.85	*.....	*.....
Columbian Carbon:							
††Sept. 30 quarter	*y*6.50	1,165,381	810,799	2.17	1.51	.....	.....
Nine months, Sept. 30	*y*6.50	3,686,067	2,654,104	6.85	4.94	$1,136,515	.....
Formica Insulation:							
Nine months, Sept. 30	.80	215,413	153,329	1.19	.85	*.....	*.....
Interchemical Corp.:							
††Sept. 30 quarter	2.00	195,202	375,613	.32	.96	.....	.....
Nine months, Sept. 30	2.00	961,685	961,324	2.28	2.34	227,322	$276,749
Twelve months, Sept. 30	2.00	1,299,475	1,267,063	3.10	3.08	.....	.....
International Nickel:							
Sept. 30 quarter	*y*2.25	13,030,028	9,572,106	.86	.62	5,257,469	3,986,272
Nine months, Sept. 30	*y*2.25	38,944,380	27,029,080	2.57	1.75	15,626,703	12,458,304
Kellogg (Spencer) & Sons, Inc.:							
Year, August 28	$1.60	1.428,909	1,310,850	*h*2.81	*h*2.62	375,280	510,850
New Jersey Zinc:							
Sept. 30 quarter	*y*4.50	2,172,145	1,253,813	1.10	.64	.....	
Nine months, Sept. 30	*y*4.50	6,523,928	3,593,585	3.32	1.83	634,136	*d*332,943
Parker Rust-Proof:							
Sept. 30 quarter	$1.50	229,303	204,282	.53	.47	.....	.....
Nine months, Sept. 30	$1.50	901,656	738,487	2.09	1.72	.....	.....
Sherwin Williams Co. of Canada:							
Year, August 31	*f*....	417,721	262,213	.87	.10	.....	.....
S. O. of California:							
Sept. 30 quarter	$1.00	13,355,627	7,685,528	1.02	.59	*.....	*.....
Nine months, Sept. 30	$1.00	31,135,818	16,665,074	2.39	1.28	*.....	*.....
Swan-Finch Oil:							
Year, June 30	*w*.25	101,115	68,428	2.63	1.68	.....	.....
United Carbon:							
Sept. 30 quarter	$4.00	551,740	487,358	1.39	1.22	.....	.....
Nine months, Sept. 30	$4.00	1,917,108	1,574,965	4.82	3.96	.....	.....
United Chemicals, Inc.:							
††Sept. 30 quarter	*f*....	24,584	†15,304	....	....	.....	.....
Nine months, Sept. 30	*f*....	69.637	†26,971	....	....	.....	.....

†† September 30th quarter; § Plus extras; * Not available; *y* Amount paid or payable in 12 months to and including the payable date of the most recent dividend announcement; *h* On shares outstanding at close of respective periods; *f* No common dividend; *w* Last dividend declared, period not announced by the company.

Additional Dividends Reported

Atlas Powder has declared a dividend of 75c a common share. During this year dividends of 75c each were paid on March 10, June 10, and $1 on Sept. 10.

Penn. Salt Mfg. has declared a dividend of $3 a share. Company paid $2 in Sept., $2.50 in June and $1.25 a share in March of this year.

A dividend of $1 a share has been declared on the capital stock of N. J. Zinc Co., bringing total dividends for the year thus far to $4.50.

Monsanto Votes $1 Extra

Monsanto directors have voted to declare a special dividend of $1 on the common, payable on Dec. 22 to holders of record of Dec. 1.

Company also announced the distribution of one week's pay to all employees not already working under incentive plans who have been employed continuously by the company and its American subsidiaries for one year or more, with a proportionate part to those employed less than a year.

W. M. Rand was elected a vice president, O. Bezanson, assistant vice president, and W. I. Warren, assistant controller.

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EASTMAN TESTED CHEMICALS

Chemical Stocks and Bonds

Nov. Last	1937 High	1937 Low	1936 High	1936 Low	1935 High	1935 Low	Sales	Stocks	Par $	Shares Listed	Dividends*	Earnings** $-per share-$ 1936	Earnings** $-per share-$ 1935
							Number of shares Nov. 1937	1937					
NEW YORK STOCK EXCHANGE													
50	80¼	44½	86½	58	57½	35	36,700	270,200	Air Reduction	No	2,523,065	$2.50	2.79	2.10
155½	258½	145	245	157	173	125	23,100	176,600	Allied Chem. & Dye	No	2,214,099	6.00	11.44	8.71
63	101½	53½	89	49	57¾	41½	1,100	60,900	Amer. Agric. Chem.	No	210,934	2.50	4.71	6.37
16¼	30¾	8¼	35⅜	20½	35¾	22½	14,000	219,500	Amer. Com. Alcohol	20	260,947	.50	4.55	3.16
27⅜	46	26	50	37	52	36	2,900	51,700	Archer-Dan-Midland	No	549,546	3.00	3.20	3.46
42⅜	94	38	84	48	48½	32¾	3,000	41,500	Atlas Powder Co.	No	248,660	3.50	4.21	2.81
115	133	112¾	131	112	115	106¾	280	4,070	5% conv. cum. pfd.	100	88,781	5.00	20.86	16.93
19¾	41¼	17	32¼	21¾	35⅜	19½	39,000	1,545,000	Celanese Corp. Amer.	No	1,000,000	1.50	2.25	1.99
95	115	95	116	106	111¾	97½	300	12,900	prior pfd.	100	164,818	7.00	27.25	35.34
10	25¾	8½	21¼	13	21	15⅛	44,900	752,200	Colgate-Palm.-Peet	No	1,956,086	.75	1.40	1.36
95⅛	104½	95⅛	106½	100	107¼	101	500	15,900	6% pfd.	100	246,496	6.00	17.12	16.79
73	125¾	65	136½	94	101¼	67	8,100	58,100	Columbian Carbon	No	537,586	5.75	7.48	5.56
9⅛	21¼	5	24⅝	14¼	23⅞	16½	60,900	932,600	Commercial Solvents	No	2,635,371	.80	.84	1.02
57¼	71¼	50½	82½	63⅝	78⅜	60	26,900	290,100	Corn Products	25	2,530,000	3.75	3.86	2.62
163	171½	153	170	158	165	148¼	200	9,300	7% cum. pfd.	100	243,739	7.00	46.76	33.97
36⅞	76⅛	34	63	42	50⅜	35½	1,000	17,900	Devoe & Rayn. A	No	95,000	2.00	4.49	2.89
87	159¼	79½	142¼	94⅜	105½	80½	5,000	50,100	Dow Chemical	No	945,000	2.40	4.48	3.43
112	180⅛	98	184¾	133	146½	86¾	64,600	468,100	DuPont de Nemours	20	11,049,470	6.10	7.56	5.04
111⅛	112	107½	...	...	...	...	2,900	4,300	4½% pfd.	100	500,000	4.50	.....	.....
131	135½	130	136½	129	132	126⅞	1,600	21,000	6% cum. deb.	100	1,092,699	6.00	84.21	56.81
153	198	144	185	156	172¼	110½	16,900	146,600	Eastman Kodak	No	2,250,921	6.75	8.24	6.90
160	164	150	166	152	164	141	190	3,550	6% cum. pfd.	100	61,657	6.00	306.64	258.09
22½	32¼	18	35⅝	23½	30⅝	17¼	14,300	285,600	Freeport Texas	10	796,380	1.00	2.43	1.78
104½	117	102	135	108	125	112½	170	2,870	6% conv. pfd.	100	12,031	6.00	163.38	121.30
28¼	51½	20¼	55¼	39½	49½	23¾	15,400	245,600	Glidden Co.	No	603,304	2.00	3.29	2.91
46¼	58⅛	43	56	52¼	...	...	1,400	21,300	4½% cum. pfd.	50	200,000	2.25	15.43	.....
93	117½	80⅛	133	99⅜	119½	85	1,900	26,500	Hazel Atlas	25	434,409	7.64	6.56	7.58
59	92½	50	75	42	45	35½	3,900	43,700	Hercules Powder	No	1,067,354	2.62	3.25	2.12
126	135½	125	135	126	131	122	130	3,010	6% cum. pfd.	100	105,765	6.00	48.97	36.30
20¼	47½	16	41⅜	25⅝	36⅜	23½	20,100	414,000	Industrial Rayon	No	606,500	2.10	2.24	1.00
25¾	64¼	20	48	37	42¾	21½	5,000	20,600	Interchem.	No	288,358	2.75	3.02	2.74
98	111½	98	112	107	110	98½	170	2,360	6% pfd.	100	66,917	6.00	18.97	17.19
3	9⅛	2	5⅞	2⅞	5	2⅝	11,800	705,100	Intern. Agricul.	No	436,049	None	—1.55	—.99
24½	63½	18¼	47¼	22¾	42¾	26	2,200	122,000	7% cum. pr. pfd.	100	100,000	None	.23	2.69
42⅛	73⅜	37	66⅜	43¼	47¼	22¼	259,000	2,457,300	Intern. Nickel	No	14,584,025	1.30	2.40	1.65
21	28¾	19½	30	23	36¼	25	900	15,800	Intern. Salt	No	240,000	2.00	1.65	1.32
21	36	20	36¾	29¼	36¼	31	900	20,000	Kellogg (Spencer)	No	500,000	1.60	2.62	2.22
40½	79	34	80¼	47¼	49¼	21½	36,100	319,300	Libbey Owens Ford	No	2,503,168	3.50	4.15	3.26
18½	26⅞	14	46½	32½	37¼	24½	13,100	159,800	Liquid Carbonic	No	684,812	.80	1.58	1.29
24¾	41¾	22½	42⅜	27½	33⅞	23¾	12,100	127,500	Mathieson Alkali	No	830,428	1.50	1.76	1.44
76	107¼	71	103	79	94¼	55	12,300	125,100	Monsanto Chem.	10	1,114,409	3.00	4.01	3.84
109	109	105	...	...	...	...	400	1,000	4½% pfd.	100	50,000	4.50	.....	.....
26	44	18	36½	26¾	20⅝	14½	34,800	505,100	National Lead	10	3,095,100	.875	1.71	1.08
154	171	153	171	155	162½	150	200	5,800	7% cum. "A" pfd.	100	213,793	7.00	33.83	25.40
132	150	127	147	137¾	140½	121¾	60	2,160	6% cum. "B" pfd.	100	77,462	6.00	74.50	49.05
15¾	41¾	10⅛	40	9	10⅞	4⅜	65,800	923,800	Newport Industries	1	519,347	.60	.98	.57
63	103¾	51¼	82	64	64½	40	26,400	192,300	Owens-Illinois Glass	25	2,661,204	3.00	3.80	3.29
46⅞	65½	43¼	56	40¼	53¾	42⅜	16,900	173,800	Procter & Gamble	No	6,410,000	1.87	2.39	2.32
116½	118½	114½	122½	115¾	121	115	510	5,250	5% pfd. (ser. 2-1-29)	100	171,569	5.00	94.14	88.15
7¼	15⅜	5¼	13	5⅝	8¾	4	13,400	479,300	Tenn. Corp.	5	853,696	.15	.47	.22
30⅜	44	23¾	44⅜	33	36¾	28⅜	20,100	797,000	Texas Gulf Sulphur	No	2,540,000	2.50	.....	1.94
71	111	61¼	105¼	71⅜	75¾	44	93,100	681,700	Union Carbide & Carbon	No	8,903,138	2.30	4.09	3.06
46½	91	45½	96¾	68	78	46	11,000	91,900	United Carbon	No	397,877	4.05	5.54	4.71
20¾	43⅝	16⅛	59	31¼	50⅛	35⅛	19,100	143,800	U. S. Indus. Alco.	No	391,033	1.00	—.20	2.16
16¼	39⅜	9¼	30⅝	16¼	21¾	11¼	45,300	842,300	Vanadium Corp. Amer.	No	376,637	None	.40	—1.13
4⅛	12¾	2⅜	8½	4⅛	4⅝	2½	20,400	812,000	Virginia-Caro. Chem.	No	486,000	None	—2.56	—.79
26½	74⅜	18½	58¾	28¾	35¾	17½	13,200	289,600	6% cum. part. pfd.	100	213,392	None	.16	4.20
13¾	27¼	10¾	32	19¾	25½	16¾	3,400	56,600	Westvaco Chlorine	No	284,962	.75	1.39	1.63
24	34⅞	24	35¼	31¾	...	...	800	34,000	Westvaco Chlorine, cum. pfd.	30	192,000	1.50	3.26	.....
NEW YORK CURB EXCHANGE														
23	37	17⅝	40¾	29¼	30	15	36,000	632,900	Amer. Cyanamid "B"	No	2,404,194	1.00	1.77	1.61
1	2⅞	1	3¾	2⅛	4	2	2,500	20,100	British Celanese Am. R.	10	2,806,000	None	—4.53	—.71
75	124	83	116¼	99¼	115	90	600	15,700	Celanese, 7% cum. 1st pfd.	100	148,179	7.00	24.47	21.96
5	15	3	16½	9	15	7	700	15,900	Celluloid Corp.	15	194,952	None	—.80	—.95
11¾	14⅝	10½	15	11⅞	14½	11⅜	800	8,650	Courtaulds' Ltd.	1 £	24,000,000	7½%	8.40%	7.51%
6⅛	10⅝	3½	10¾	5	12½	6¼	2,600	66,500	Duval Texas Sulphur	No	500,000	.50	.61	.16
33¼	47½	31¾	55	39	58	37	900	14,600	Heyden Chem. Corp.	10	149,997	2.25	3.56	3.22
84¼	147½	77	140	98¼	97¼	46¾	5,440	73,440	Pittsburgh Plate Glass	25	2,142,443	6.00	7.15	5.32
81⅞	154¾	72¼	154½	117	128⅞	84	5,200	6,850	Sherwin Williams	25	635,583	4.00	8.04	6.19
106⅝	114	106¼	116	110	113½	106	320	3,160	5% pfd. cum.	100	155,521	5.00	41.44	33.17
PHILADELPHIA STOCK EXCHANGE														
135¼	179	115	179	114¾	116¾	76½	750	9,125	Pennsylvania Salt	50	150,000	8.50	10.59	7.74

Nov. Last	1937 High	1937 Low	1936 High	1936 Low	1935 High	1935 Low	Sales	Bonds	Date Due	Int. %	Int. Period	Out-standing $
NEW YORK STOCK EXCHANGE							Nov. 1937	1937				
103	109½	99¾	117½	107¾	116	104½	251,000	4,412,000	Amer. I. G. Chem. Conv. 5½'s	1949	5½ M. N.	29,929,000
33	42½	23	42½	27½	29¾	7⅜	104,000	2,268,000	Anglo Chilean Nitrate inc. deb.	1967	4½-5	12,433,000
101¾	102¼	100⅛	...	...	...	...	48,000	75,000	Dow Chemical	1951	3 J. D.	5,000,000
99⅜	102	98½	102¾	96¾	100¼	91⅛	27,000	387,000	Int. Agric. Corp. 1st Coll. tr. stpd. to 1942	1942	5 M. N.	5,994,100
26½	35⅜	21¼	39	21	21½	7	268,000	3,299,000	Lautaro Nitrate inc.	1975	4 J. D.	31,357,000
22	28¾	20¾	35	23½	38	32½	4,000	29,000	Ruhr Chem. 6's	1948	6 A. O.	3,156,000
99	105	93½	105	103	104	91½	20,000	310,000	Tenn. Corp. deb. 6's "B"	1944	6 M. S.	3,007,900
81½	111	81½	98½	85¼	94¼	66	37,000	1,709,000	Vanadium Corp. conv. 5's	1941	5 A. A.	2,825,000

* Paid in 1936, including extras; ** For either fiscal or calendar years.

Industrial Trends

Business Activity Fails to Rally—Industry Looks to Washington for Definite Assurance of Cooperation—Steel Activity Reaches 3-year Low Point—Retail Trade Holding Up Well—

A "Be Good to Business" month failed to provide the vital spark for a revival in industrial activity for the very simple reason that the Administration is still largely dealing in generalities and fails to be specific. The prescription has worked in the past, but is woefully inefficient now. Still, a faint, but appreciable improvement in sentiment was discernible in the last week or so based principally on the belief that Washington now seeks to enlist the cooperation of business and will make a determined effort towards balancing the budget.

Roger W. Babson, well-known authority states:—"The recovery tide is still on the up-trend. Fundamentally we should not be entering a major depression. There is no over-expansion in industrial output. Commodity prices are readjusted. Inventories are running off. The banks are in a sound position. Farm income is the highest in 10 years. The long-term future of business lies with the character of our people; but the future of business over the next 12 months lies in the hands of the Administration in Washington." He continues: "An honest 'mortatorium' on their experimental program would do more for business than spending $5,000,000,000 on armaments, public works, or boon-doggling. In the last 2 months thousands have been thrown out of jobs, stocks have broken 40%, business has plummeted 15%. Business is now at the cross-roads. It is up to Congress whether we are heading for prosperity or depression."

The decline in steel activity has become the sharpest on record, outclassing that in late 1907. Fortunately there are signs that at 29.6% of capacity the bottom has been reached, or near to it, and that with the turn of the year an upward movement will take place. Automotive production has bogged down after an excellent start because producers are uncertain on the business trend. Dealers, in most cases, are well stocked, while retail sales are below even the modest expectations that were earlier entertained. One estimate places the output of '38 cars at 30% under that of '37, yet every one is agreed that the potential market is greater this year than last.

Business analysts estimate, however, that industrial operations in December will show a smaller rate of loss. Curtailment in many lines during October and November has been much more severe than generally realized. Inventory positions in many divisions of industry have improved in the past few weeks and it is hoped that a revival in purchasing will soon make itself apparent.

Most accepted indices of business activity reflect the drop in manufacturing operations. *The N. Y. Times* Index of Business Activity on Nov. 20 stood at 88.9, as compared with 104.7 on Nov. 21, 1936, and the Federal Reserve Board index of production is now in the low 90's.

Commodity prices generally are in new low ground for '37. Since the middle of September, when the general price decline began, the index of the National Fertilizer Association has fallen off 6.8%; that of *The N. Y. Journal of Commerce* stood at 83.4 on Oct. 30 and 80.5 on Nov. 27.

Carloadings are showing sharp declines when comparison is made with the corresponding weeks of last year. Electrical consumption totals are still ahead of '36, but the percentages of gains are narrowing perceptibly. Retail trade, on the other hand, is holding up exceedingly well and is the most encouraging feature for it promises a clearing of manufactured stocks and an early resumption in the wholesale and production divisions. Christmas buying, while not expected to equal that of last year, is expected to be in good volume.

The country is watching Congress closely. Several weeks of the special session are gone. What was to have been a "must" program for many New Deal plans has been turned into a welter of words because of the unexpected slump in business and the lack of a definite plan of action on the part of the Administration leaders. It is extremely doubtful now that any satisfactory tax revision program can be enacted at this session.

Despite the uncertainties that abound the contract season in chemicals has so far been remarkably quiet and devoid of sensational developments. Aside from the "break" in carbon black, the price structure generally has remained firm. In most instances, buyers have shown a remarkable willingness to place contracts for '38 without undue hesitation.

Statistics of Business

	October 1937	October 1936	September 1937	September 1936	August 1937	August 1936
General:						
Acceptances, outst'd'g *c*	.....	.....	$346	$330	$344	$308
Coal Prod., anthracite, tons	4,579,000	4,608,000	3,507,000	3,874,000	2,436,930	2,917,377
Coal Prod., bituminous, tons	40,040,000	43,321,000	39,055,000	.....	33,665,000	33,086,000
Com. Paper, outst'd'g *c*	.....	.....	$331	$197	$329	$205
Failures, Dun & Bradstreet	768	611	564	586	707	655
Factory Payrolls, totals†	100.2	89.0	100.1	83.4	102.3	83.4
Factory Employment†	100.4	96.7	102.1	95.3	89.9	93.4
Merchandise Imports‡	.....	$215,525	$233,361	$215,701	$245,707	$193,073
Merchandise Exports‡	.....	$219,967	$296,729	$277,695	$220,539	$178,975
Manufacturing:						
Automotive Production	.....	224,628	171,203	135,165	394,322	371,274
Boot & Shoe Production	.....	39,361,698	33,616,864	40,974,713	38,562,959	.....
Bldg. Contracts, Dodge*‡	$202,081	$225,768	$207,087	$234,272	$285,104	$275,281
Newsprint Production:						
Canada, tons	314,594	301,106	312,351	269,782	318,713	270,053
U. S. tons	78,352	81,027	77,635	72,216	80,311	73,673
Plate Glass Prod., sq. ft.	14,854,910	20,752,657	16,479,144	19,552,775	17,898,064	18,710,040
Steel Ingots Prod., tons*	3,392,691	4,534,246	4,301,869	4,151,388	4,875,671	4,184,287
% Steel Activity	58.31	78.15	76.52	74.05	83.79	72.11
Pig Iron Prod., tons	2,892,629	2,991,887	3,410,371	2,730,293	3,605,818	2,711,431
U. S. Consumption, crude rubber, tons	38,707	49,637	43,893	46,449	41,456	46,777
Tire Shipments	.....	.....	.....	3,835,998	.....	4,967,383
Tire Production	.....	.....	.....	4,981,131	.....	5,014,415
Tire Inventory	.....	.....	.....	9,005,065	.....	7,793,438
Cotton Consumption, bales	526,464	651,086	601,837	630,000	604,380	575,014
Cotton spindles operating	23,724,272	23,662,464	23,886,948	23,518,904	24,353,102	23,433,658
Chemical:						
Chemical Employment†*a*	128.3	120.2	128.9	118.8	137.1	123.0
Chemical Payrolls†*a*	137.4	115.9	137.7	110.6	156.1	117.1

Week Ending	Carloadings 1937	Carloadings 1936	Carloadings % of Change	Electrical Output§ 1937	Electrical Output§ 1936	Electrical Output§ % of Change	Jour. of Com. Price Index	Nat'l Fertilizer Ass'n Price Indices: Chem. & Drugs	Fats & Oils	Fert. Mat.	Mixed Fert.	All Groups	‡‡Labor Dept. Chem. & Drug Price Index	% Steel Activity	N. Y. Times Index Bus. Act.	Fisher's Index Pur. Power
Oct. 23	773,353	816,242	— 5.4	.....	.....	.....	85.2	95.6	67.4	73.8	80.5	83.3	80.6	52.1	97.8	111.9
Oct. 30	771,655	814,514	— 5.2	2,254,947	2,166,656	+ 4.1	83.4	95.6	65.6	73.8	80.5	82.2	80.6	48.6	95.4	113.5
Nov. 6	732,145	759,318	— 3.5	2,202,451	2,175,810	+ 1.2	82.1	95.1	67.1	73.2	80.5	81.7	80.1	41.0	93.7	113.8
Nov. 13	689,614	784,980	—12.1	2,176,557	2,169,480	+ 0.3	82.1	96.3	67.6	73.2	80.5	81.1	80.0	36.4	90.5	113.5
Nov. 20	647,251	789,772	—18.0	2,224,213	2,169,715	+ 2.5	81.0	96.4*y*	65.4*z*	73.2	79.9	79.8*z*	79.8	31.0	88.9	111.9
Nov. 27	.....	.....	.....	.....	.....	.....	80.5	...	...	...	...	...	...	...	...	...

c 000,000 omitted, as end of month; * 37 states; † Dept. of Labor 3-year average, 1923-1925 = 100.0; ‡ 000 omitted; § K.W.H., 000 omitted; *a* Includes all allied products, but not petroleum refining; ‡‡ 1926-1928 = 100.0; *z* New 1937 low; *y* New 1937 high.

Prices Current

Heavy Chemicals, Coal-tar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Petroleum Solvents and Chemicals, Naval Stores, Fats and Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Import chemicals are so designated. Resale stocks when a market factor are quoted in addition to maker's prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f. o. b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f. o. b., or ex-dock. Materials sold f. o. b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1936 Average $1.18 - Jan. 1937 $1.11 - November 1937 $1.13

		Current Market	1937 Low	1937 High	1936 Low	1936 High
Acetaldehyde, drs, c-l, wks	lb.	...	.14	...	.14	...	.14
Acetaldol, 95%, 50 gal drs wks	lb.	.21	.25	.21	.25	.21	.25
Acetamide, tech, lcl, kegs	lb.	.32	.43	.32	.43	.38	.43
Acetanalid, tech, 150 lb bbls	lb.	...	.29	.24	.29	.24	.26
Acetic Anhydride, 100 lb cbys	lb.	.20	.24	.20	.24	.21	.25
drs, f.o.b. wks, frt all'd	lb.	.13	.15	.13	.15	...	.15
Acetin, tech, drs	lb.	...	.33	.22	.33	.22	.24
Acetone, tks, f.o.b. wks, frt allowed	lb.	...	.04¾	.04¾	.06½	.06	.11
drs, c-l, f.o.b. wks, frt all'd	lb.	...	.05¾	.05¾	.07½	.07	.12
Acetyl chloride, 100 lb cbys	lb.	.55	.68	.55	.68	.55	.68
ACIDS							
Abietic, kgs, bbls	lb.	.09¾	.10	.06¾	.10	.06¾	.07
Acetic, 28%, 400 lb bbls, c-l, wks	100 lbs.	...	2.38	2.25	2.53	...	2.45
glacial, bbls, c-l, wks	100 lbs.	...	8.43	8.00	8.70	...	8.43
glacial, USP, bbls, c-l, wks	100 lbs.	...	10.25	10.50	12.43	...	12.43
Acetylsalicylic, USP, 225 lb bbls	lb.	...	.60	.50	.60	...	...
Adipic, kgs, bbls	lb.	...	.72	...	.72	...	.72
Anthranilic, ref'd, bbls	lb.	.95	1.00	.85	1.00	.85	.95
tech, bbls	lb.	...	.75	...	.75	...	.75
Battery, cbys, wks	100 lbs.	1.60	2.55	1.35	2.60	1.35	2.50
Benzoic, tech, 100 lb kgs	lb.	.43	.47	.43	.47	.40	.45
USP, 100 lb kgs	lb.	.54	.59	.54	.59	.54	.59
Boric, tech, gran, 80 tons, bgs, delv	ton *a*	...	95.00	...	95.00	...	95.00
Broenner's, bbls	lb.	...	1.11	...	1.11	1.11	1.25
Butyric, edible, c-l, wks, cbys	lb.	1.20	1.30	1.20	1.30	1.20	1.30
synthetic, c-l, drs, wks	lb.	...	.22	...	.22	...	.22
wks, lcl	lb.	...	.23	...	.23	...	.23
tks, wks	lb.	...	.21	...	.21	...	.21
Camphoric, drs	lb.	5.50	5.70	5.50	5.70	...	5.25
Chicago, bbls	lb.	...	2.10	...	2.10	...	2.10
Chlorosulfonic, 1500 lb drs, wks	lb.	.03½	.05	.03½	.05	.03½	.05
Chromic, 99¾%, drs, delv	lb.	.14¾	.16¾	.14¾	.16¾	.14¾	.16¾
Citric, USP, crys, 230 lb bbls	lb. *b*	.24	.25	.24	.26	.25	.29
anhyd, gran, bbls	lb. *b*	...	.26½	.26½	.29	.29	.31
Cleve's, 250 lb bbls	lb.	.50	.52	.50	.52	.50	.54
Cresylic, 99%, straw, HB, drs, wks, frt equal	gal.	.89	.91	.72	.91	.51	.74
99%, straw, LB, drs, wks, frt equal	gal.	.92	.94	.77	.94	.68	.79
resin grade, drs, wks, frt equal	lb.	.10¾	.11¼	.09	.11¼	.52*y*	.65*y*
Crotonic, drs	lb.	.75	1.00	.75	1.00	.90	1.00
Formic, tech, 140 lb drs	lb.	.10½	.11½	.10½	.13	.11	.13
Fumaric, bbls	lb.	...	.60	...	.60	...	.60
Fuming, see Sulfuric (Oleum)							
Gallic, tech, bbls	lb.	.75	.79	.65	.75	.65	.68
USP, bbls	lb.	.87	.91	.77	.91	.70	.80
Gamma, 225 lb bbls, wks	lb.	...	.85	...	.85	.80	.85
H, 225 lb bbls, wks	lb.	.50	.55	.50	.55	.50	.55
Hydriodic, USP, 10% sol. cbys	lb.	.50	.51	.50	.51	.50	.51
Hydrobromic, 34% com 155 lb cbys, wks	lb.	.42	.44	.40	.42	...	...
Hydrochloric, see muriatic.							
Hydrocyanic, cyl, wks	lb.	.80	1.30	.80	1.30	.80	1.30
Hydrofluoric, 30%, 400 lb bbls, wks	lb.	.07	.07½	.07	.07½	.07	.07½
Hydrofluosilicic, 35%, 400 bbls, wks	lb.	.10½	.15	.10½	.15	.11	.12
Lactic, 22%, dark, 500 lb bbls	lb.	.02½	.02¾	.02½	.02¾	.02½	.05
22%, light ref'd, bbls	lb.	.03½	.03¾	.03½	.03¾	.03½	.07
44%, light, 500 lb bbls	lb.	.05½	.05¾	.05½	.05¾	.05½	.12
44%, dark, 500 lb bbls	lb.	.06½	.06¾	.06½	.06¾	.06½	.10
50%, water white, 500 lb bbls	lb.	.10½	.11½	.10½	.11½	.10½	.14½
USP X, 85%, cbys	lb.	.42	.45	.42	.50	.45	.50
Laurent's, 250 lb bbls	lb.	.45	.46	.45	.46	.45	.47
Linoleic, bbls	lb.	...	.20	.16	.20	.16	.16
Maleic, powd, kgs	lb.	.30	.40	.29	.40	.29	.32
Malic, powd, kgs	lb.	.45	.60	.45	.60	.45	.60
Metanillic, 250 lb bbls	lb.	.60	.65	.60	.65	.60	.65
Mixed, tks, wks	N unit	.06½	.07¼	.06½	.07¼	.06½	.07¼
	S unit	.008	.009	.008	.009	.008	.009
Monochloracetic, tech, bbls	lb.	.16	.18	.16	.18	.16	.18
Monosulfonic, bbls	lb.	1.50	1.60	1.50	1.60	1.50	1.60
Muriatic, 120 lb cbys, c-l, wks	100 lb.	...	1.50	1.35	1.50	...	1.35
tks, wks	100 lb.	...	1.00	...	1.00	...	1.00
Muriatic (continued):							
20°, cbys, c-l, wks	100 lb.	...	1.75	1.45	1.75	...	1.45
tks, wks	100 lb.	...	1.10	...	1.10	1.10	1.20
22°, c-l, cbys, wks	100 lb.	...	2.25	1.95	2.25	...	1.95
tks, wks	100 lb.	...	1.60	...	1.60	...	1.60
CP, cbys	lb.	.06½	.07⅛	.06½	.07⅛	.06½	.07⅛
N & W, 250 lb bbls	lb.	.85	.87	.85	.87	.85	.87
Naphthenic, 240-280 s.v., drs	lb.	.10	.13	.10	.14	.11	.14
Sludges, drs	lb.	...	.05	.05	.10	.06	.10
Naphthionic, tech, 250 lb bbls	lb.	.60	.65	.60	.65	.60	.65
Nitric, 36°, 135 lb cbys, c-l, wks	100 lb. *c*	...	5.00	...	5.00	...	5.00
38°, c-l, cbys, wks	100 lb. *c*	...	5.50	...	5.50	...	5.50
40°, cbys, c-l, wks	100 lb. *c*	...	6.00	...	6.00	...	6.00
42°, c-l, cbys, wks	100 lb. *c*	...	6.50	...	6.50	...	6.50
CP, cbys, delv	lb.	.11½	.12½	.11½	.12½	.11½	.12½
Oxalic, 300 lb bbls, wks, or N. Y.	lb.	.10¾	.12	.10¾	.12	.10¾	.12½
Phosphoric, 50%, USP, cbys	lb.	.12	.14	.12	.14	.14	.14
50%, acid, c-l, drs, wks	lb.	.06	.08	.06	.08	.06	.08
75%, acid, c-l, drs, wks	lb.	.09	.10½	.09	.10½	.09	.10½
Picramic, 300 lb bbls, wks	lb.	.65	.70	.65	.70	.65	.70
Picric, kgs, wks	lb.	.35	.40	.35	.40	.30	.40
Propionic, 98% wks, drs	lb.	...	.22	.20	.22	...	.35
80%	lb.	.16	.17½	.16	.17½	.15	.17½
Pyrogallic, tech, lump, pwd, bbls	lb.	...	1.05	...	...	...	...
cryst, USP	lb.	1.45	1.63	1.30	1.48	...	...
Ricinoleic, bbls	lb.	...	.38	.35	.38	...	...
Salicylic, tech, 125 lb bbls, wks	lb.	...	.33	...	.33	...	.40
Sebacic, tech, drs, wks	lb.	.37	.41	.37	.41	...	...
Succinic, bbls	lb.	...	.75	...	.75	...	.75
Sulfanilic, 250 lb bbls, wks	lb.	.17	.18	.17	.18	.17	.19
Sulfuric, 60°, tks, wks	ton	...	13.00	12.00	13.00	11.00	12.00
c-l, cbys, wks	100 lb.	...	1.25	1.10	1.25	...	1.10
66°, tks, wks	ton	...	16.50	15.50	16.50	...	15.50
c-l, cbys, wks	100 lb.	...	1.50	1.35	1.50	...	1.35
CP, cbys, wks	lb.	.06½	.07½	.06½	.07½	.06½	.07½
Fuming (Oleum) 20% tks, wks	ton	...	18.50	...	18.50	...	18.50
Tannic, tech, 300 lb bbls	lb	.40	.47	.19	.47	.19	.40
Tartaric, USP, gran, powd, 300 lb bbls	lb.	.24¼	.25¼	.21¾	.25¼	.22¾	.24
Tobias, 250 lb bbls	lb.	.65	.67	.65	.67	.65	.72½
Trichloroacetic bottles	lb.	2.00	2.50	2.00	2.50	2.45	2.75
kgs	lb.	...	1.75	...	1.75	...	1.75
Tungstic, tech, bbls	lb.	no price		2.50	2.75	1.50	1.60
Vanadic, drs, wks	lb.	1.10	1.20	1.10	1.20	1.10	1.20
Albumen, light flake, 225 lb bbls	lb.	.52	.60	.47	.60	.50	.60
dark, bbls	lb.	.11	.15	.11	.17	.12	.17
egg, edible	lb.	...	1.05	.76	1.05	.77	1.05
vegetable, edible	lb.	.74	.78	.76	.78	.65	.70
ALCOHOLS							
Alcohol, Amyl (from Pentane) tks, delv	lb.	...	.123	...	.123	.123	.143
c-l, drs, delv	lb.	...	.133	...	.133	.133	.150
lcl, drs, delv	lb.	...	.143	...	.143	.143	.157
Amyl, secondary, tks, delv	lb.	...	.08½	...	.08½	.08½	.108
Benzyl, cans	lb.	.70	1.10	.65	1.10	.65	1.10
Butyl, normal, tks, f.o.b. wks, frt allowed	lb. *d*	...	.09	.08½	.09	.08½	.11
c-l, drs, f.o.b. wks, frt allowed	lb. *d*	...	.10	.09½	.10	.09½	.12
Butyl, secondary, tks, delv	lb. *d*	...	.06	.06	.07	.07	.096
c-l, drs, delv	lb. *d*	...	.07	.07	.08	.08	.106
Capryl, drs, tech, wks	lb.	...	.85	...	.85	...	.85
Cinnamic, bottles	lb.	2.00	2.50	2.00	3.65	2.50	3.65
Denatured, CD, No. 1*, 12, 13, c-l, drs, wks	gal. *e*	...	.35	.33	.35	.30	.44*
Western schedule, c-l, wks	gal. *e*	...	.28	.37	.39	.39	.52*
Denatured, SD, No. 1, tks		...	.27	.26	.27	.23	.28
c-l, drs, wks	gal. *e*	...	.33	.32	.33	.29	.34
Diacetone, tech, tks, delv	lb. *f*	...	.11½	...	.11½	...	.16
c-l, drs, delv	lb. *f*	...	.12½	...	.12½	...	.17
Ethyl, 190 proof, molasses, tks	gal. *g*	...	4.06	4.05	4.07	4.07	4.10
c-l, drs	gal. *g*	...	4.12	4.11	4.12	4.11	4.27
c-l, bbls	gal. *g*	...	4.13	4.12	4.13	4.12	4.28
absolute, drs	gal. *g*	4.54	6.08½	4.54	6.08½	4.54	6.11½

a Powdered boric acid $5 a ton higher in each case; USP $15 higher; *b* Powdered citric is ½c higher; kegs are in each case ½c higher than bbls.; *y* Price given is per gal.

c Yellow grades 25c per 100 lbs. less in each case; *d* Spot prices are 1c higher; *e* Anhydrous is 5c higher in each case; *f* Pure prices are 1c higher in each case.

ABBREVIATIONS—Anhydrous, anhyd; bags, bgs; barrels, bbls; carboys, cbys; carlots, c-l; less-than-carlots, lcl; drums, drs; kegs, kgs; powdered, powd; refined, ref'd; tanks, tks; works, f.o.b., wks.

		Current Market	1937 Low	1937 High	1936 Low	1936 High
Alcohols (continued)						
Furfuryl, tech, 500 lb drs	lb.	.30	.35	.30	.35	.35
Hexyl, secondary tks, delv	lb.	...	.12	.11½	.12	... .11½
c-l, drs, delv	lb.	...	.13	.12½	.13	... .12½
Normal, drs, wks	lb.	3.25	3.50	3.25	3.50	3.25 3.50
Isoamyl, prim, cans, wks	lb.	...	.32	...	.32	... .32
drs, lcl, delvd	lb.	...	.27	...	.27	... .27
Isobutyl, ref'd, lcl, drs	lb.	...	.10	...	.10	.10 .12
c-l, drs	lb.	...	.09½	...	.09½	.09½ .11½
tks	lb.	...	.08½	...	.08½	.08½ .10½
Isopropyl, refd, c-l, drs, f.o.b. wks, frt allowed	lb.	...	.39½	.39½	.45	.45 .55
Propyl, norm, 50 gal drs	gal.	...	.75	...	.75	... .75
Special Solvent, tks, wks	gal.	...	.28	.27	.28	.24 .32
Aldehyde ammonia, 100 gal drs	lb.	.80	.82	.80	.82	.80 .82
Alphanaphthol, crude, 300 lb bbls	lb.	...	.52	...	.52	.52 .65
Alphanaphthylamine, 350 lb bbls	lb.	.32	.34	.32	.34	.32 .34
Alum, ammonia, lump, c-l, bbls, wks	100 lb.	...	3.25	3.00	3.25	... 3.00
delv NY., Phila	100 lb.	...	3.40	3.15	3.40	... 3.15
Granular, c-l, bbls. wks	100 lb.	...	3.00	2.75	3.00	... 2.75
Powd, c-l, bbls, wks	100 lb.	...	3.40	3.15	3.40	... 3.15
Chrome, bbls	100 lb.	6.50	6.75	6.50	7.25	7.00 7.25
Potash, lump, c-l, bbls, wks	100 lb.	...	3.50	3.25	3.50	... 3.25
Granular, c-l, bbls, wks	100 lb.	...	3.25	3.00	3.25	... 3.40
Powd, c-l, bbls, wks	100 lb.	...	3.65	3.40	3.65	... 3.40
Soda, bbls, wks	100 lb.	...	3.25	...	3.25	... ...
Aluminum metal, c-l, NY	100 lb.	...	20.00	19.00	20.00	19.00 20.00
Acetate, CP, 20%, bbls	lb.	.09	.10	.09	.10	.09 .10
Chloride anhyd, 99%, wks	lb.	.07	.12	.07	.12	.07 .12
93%, wks	lb.	.05	.08	.05	.08	.05 .08
Crystals, c-l, drs, wks	lb.	.06	.06¼	.06	.06¼	.06 .07
Solution, drs, wks	lb.	.02¾	.03¼	.02¾	.03¼	.02¾ .03½
Hydrate, 96%, light, 90 lb bbls, delv	lb.	.13	.15	.13	.15	.13 .15
heavy, bbls, wks	lb.	.029	.03½	.029	.03½	.029 .04½
Oleate, drs	lb.	.16¾	.18½	.16¾	.18½	.15¾ .18½
Palmitate, bbls	lb.	.22	.23	.22	.23	.21 .22
Resinate, pp., bbls	lb.	...	.15	...	.15	... .15
Stearate, 100 lb bbls	lb.	.19	.21	.19	.21	.18 .21
Sulfate, com, c-l, bgs, wks	100 lb.	...	1.35	...	1.35	... 1.35
c-l, bbls, wks	100 lb.	...	1.55	...	1.55	... 1.55
Sulfate, iron-free, c-l, bgs, wks	100 lb.	...	1.90	...	1.90	... 1.90
c-l, bbls, wks	100 lb.	...	2.05	...	2.05	... 2.05
Aminoazobenzene, 110 lb kgs	lb.	...	1.15	...	1.15	... 1.15
Ammonia anhyd com, tks	lb.	.04½	.05½	.04½	.05½	.04½ .05½
Ammonia anhyd, 100 lb cyl	lb.	.16	.22	.16	.22	.15¾ .22
26°, 800 lb drs, delv	lb.	.02¼	.02½	.02¼	.02½	.02¼ .03
Aqua 26°, tks, NH	cont.	...	.05	.04½	.05	.04½ .05
tk wagon	lb.	...	.02	...	.02	.02 .024

AMMONIUM

Ammonium Acetate, kgs	lb.	.26	.33	.26	.33	.26	.33
Bicarbonate, bbls, f.o.b. wks	100 lb.	5.15	5.71	5.15	5.71	5.15	5.71
Bifluoride, 300 lb bbls	lb.	.16	.17	.16	.17	.15	.17
carbonate, tech, 500 lb bbls	lb.	.08	.12	.08	.12	.08	.12
Chloride, White, 100 lb bbls, wks	100 lb.	4.45	4.90	4.45	4.90	4.45	4.90
Gray, 250 lb bbls, wks	100 lb.	5.50	6.25	5.00	6.25	5.00	5.75
Lump, 500 lbs cks spot	lb.	.10½	.11	.10½	.11	.10½	.11
Lactate, 500 lb bbls	lb.	.15	.16	.15	.16	.15	.16
Laurate, bbls	lb.	...	.23	...	...	...	...
Linoleate	lb.	...	.15	.11	.15	.11	.12
Naphthenate, bbls	lb.	...	.17	...	...	...	...
Nitrate, tech, cks	lb.	.03¾	.04	.03¾	.04	.04	.05
Oleate, drs	lb.	...	.15	.15	.10	...	.10
Oxalate, neut, cryst, powd, bbls	lb.	...	.22½	.22½	.23	.26	.27
pure, cryst, bbls, kgs	lb.	.27	.28	.27	.28	.27	.28
Perchlorate, kgs	lb.	...	.16	...	.16	...	.16
Persulfate, 112 lb kgs	lb.	.21	.24	.21	.24	.21	.25
Phosphate, dibasic tech, powd, 325 lb bbls	lb.	.07½	.10	.07½	.10	.07½	.10
Ricinoleate, bbls	lb.	...	.15	...	...	...	...
Stearate, anhyd, bbls	lb.	...	.24	...	...	...	...
Paste, bbls	lb.	...	.07½	...	...	...	...
Sulfate, dom, f.o.b., bulk	ton	...	28.00	26.00	28.00	22.00	26.00
200 lb bgs	ton	...	29.30	...	29.30	...	...
100 lb bgs	lb.	...	30.00	...	30.00	...	...
Sulfocyanide, kgs	lb.	...	.55	...	.55	...	.55
Amyl Acetate (from pentane) tks, delv	lb.	...	.11½	...	.11½	.11½	.13½
tech, drs, delv	lb.	.11½	.12	.11½	.13½	.12½	.149
Secondary, tks, delv	lb.	...	.08½	...	.08½	...	.108
c-l, drs, delv	lb.	...	.09½	...	.09½	.11[g]	.123
Chloride, norm, drs, wks	lb.	.56	.68	.56	.68	.56	.68
mixed, drs, wks	lb.	.07	.077	.07	.077	.07	.077
tks, wks	lb.	...	.06	...	.06	...	.06
Mercaptan, drs, wks	lb.	...	1.10	...	1.10	...	1.10
Oleate, lcl, wks, drs	lb.	...	.25	...	.25	...	...
Stearate, lcl, wks, drs	lb.	...	.26	...	.26	...	...

[g] Grain alcohol 20c a gal. higher in each case.

		Current Market	1937 Low	1937 High	1936 Low	1936 High
Amylene, drs, wks	lb.	.102	.11	.102	.11	.102 .11
tks, wks	lb.	...	.09	...	.09	... .09
Aniline Oil, 960 lb drs and tks	lb.	.15	.17½	.15	.17½	.15 .17½
Annatto fine	lb.	.34	.37	.34	.37	.34 .37
Anthracene, 80%	lb.	...	.75	...	.75	... .75
40%	lb.	...	.18	...	.18	... .18
Anthraquinone, sublimed, 125 lb bbls	lb.	...	.65	.50	.65	.50 .52

ANTIMONY

Antimony metal slabs, ton lots	lb.	...	.14¾	.13⅝	.17¼	.11⅜	.14
Butter of, see Chloride.							
Chloride, soln cbys	lb.	...	.17	...	.17	.13	.17
Needle, powd, bbls	lb.	.14	.16	.14	.19½	.11	.12½
Oxide, 500 lb bbls	lb.	.15½	.16½	.14¼	.16½	.12¾	.14
Salt, 63% to 65%, tins	lb.	.23¼	.24	.22	.24	.22	.24
Sulfuret, golden, bbls	lb.	.22	.23	.22	.23	.22	.23
Archil, conc, 600 lb bbls	lb.	.21	.27	.21	.27	.21	.27
Double, 600 lb bbls	lb.	.18	.20	.18	.20	.18	.20
Aroclors, wks	lb.	.18	.30	.18	.30	.18	.30
Arrowroot, bbl	lb.	.08½	.09	.08½	.09¾	.08¾	.09¾
Arsenic, Metal	lb.	.42	.44	.42	.44	.40	.44
Red, 224 lb cs kgs	lb.	...	.15¾	...	.15¾	...	.15¾
White, 112 lb kgs	lb.	.03	.04	.03	.04	.03	.04½
Barium Carbonate precip, 200 lb bgs, wks	ton	52.50	62.50	52.50	62.50	56.50	61.00
Nat (witherite) 90% gr, c-l, wks, bgs	ton	...	44.00	42.00	45.00	42.00	45.00
Chlorate, 112 lb kgs, N Y	lb.	.16½	.17½	.16½	.17½	.15½	.17½
Chloride, 600 lb bbls, wks	ton	72.00	74.00	72.00	74.00	72.00	74.00
Dioxide, 88%, 690 lb drs	lb.	.11	.12	.11	.12	.11	.12
Hydrate, 500 lb bbls	lb.	.04¾	.05½	.04¾	.05½	.05¼	.06
Nitrate, bbls	lb.	.07	.08¼	.07	.08¼	.07	.08¼
Barytes, floated, 350 lb bbls wks	ton	...	23.65	23.65	23.65	23.65	23.65
Bauxite, bulk, mines	ton	7.00	10.00	7.00	10.00	7.00	10.00
Bentonite, c-l, No. 1, bgs, wks	ton	...	16.00	...	16.00	...	16.50
No. 2	ton	...	11.00	...	11.00	...	11.00
Benzaldehyde, tech, 945 lb drs, wks	lb.	.60	.62	.60	.62	.60	.62
Benzene (Benzol), 90%, Ind, 8000 gal tks, frt allowed	gal.	...	.16	...	.16	.16	.18
90% c-l, drs	gal.	...	.21	...	.21	...	.23
Ind pure, tks, frt allowed	gal.	...	.16	...	.16	.16	.18
Benzidine Base, dry, 250 lb bbls	lb.	.70	.72	.70	.72	.70	.74
Benzoyl Chloride, 500 lb drs	lb.	.40	.45	.40	.45	.40	.45
Benzyl Chloride, tech, drs	lb.	.30	.40	.30	.40	.30	.40
Beta-Naphthol, 250 lb bbl, wks	lb.	.23	.24	.23	.24	.24	.27
Naphthylamine, sublimed, 200 lb bbls	lb.	1.25	1.35	1.25	1.35	1.25	1.35
Tech, 200 lb bbls	lb.	.51	.52	.51	.52	.51	.55
Bismuth metal	lb.	1.00	1.10	1.00	1.10	1.00	1.10
Chloride, boxes	lb.	3.20	3.25	3.20	3.25	3.20	3.25
Hydroxide, boxes	lb.	3.15	3.20	3.15	3.20	3.15	3.20
Oxychloride, boxes	lb.	...	2.95	2.75	3.04	2.95	3.00
Subbenzoate, boxes	lb.	3.25	3.30	3.25	3.30	3.25	3.30
Subcarbonate, kgs	lb.	1.23	1.58	1.23	1.58	1.40	1.45
Trioxide, powd, boxes	lb.	...	3.57	3.45	3.57	3.45	3.50
Subnitrate	lb.	1.22	1.48	1.22	1.48	1.30	1.35
Blackstrap, cane (see Molasses, Blackstrap).							
Blanc Fixe, 400 lb bbls, wks	ton [h]	40.00	75.00	40.00	75.00	42.50	70.00
Bleaching Powder, 800 lb drs, c-l, wks, contract	100 lb.	...	2.00	...	2.00	...	2.00
lcl, drs, wks	lb.	2.25	3.60	2.25	3.60	2.25	3.60
Blood, dried, f.o.b., NY	unit	...	3.10	3.10	4.30	2.50	4.25
Chicago, high grade	unit	...	3.10	3.00	4.65	2.90	4.50
Imported shipt	unit	...	3.35	3.25	4.10	2.60	3.75
Blues, Bronze Chinese Milori							
Prussian Soluble	lb.	.36	.37	.36	.37	.37	.38½
Ultramarine,* dry, wks, bbls	lb.	...	.10	...	.10	...	.10
Regular grade, group 1	lb.	...	.15	...	.15	...	.15
Special, group 1	lb.	...	.18	...	.18	...	.18
Pulp, No. 1	lb.	...	.26	...	.26	...	.26
Bone, 4½ + 50% raw, Chicago	ton	28.00	29.00	26.00	28.00	20.00	25.00
Bone Ash, 100 lb kgs	lb.	.06	.07	.06	.07	.06	.07
Black, 200 lb bbls	lb.	.06½	.08¼	.05½	.08¼	.05½	.08¼
Meal, 3% & 50%, imp	ton		24.00	24.00	27.50	23.00	26.00
Domestic, bgs, Chicago	ton	22.00	23.00	19.00	27.00	16.00	20.00

BORAX

Borax, tech, gran, 80 ton lots, sacks, delv	ton [i]	...	42.00	40.00	42.00	...	40.00
bbls, delv	ton [i]	...	52.00	50.00	52.00	...	50.00
Tech, powd, 80 ton lots, sacks	ton [i]	...	47.00	45.00	47.00	...	45.00
bbls, delv	ton [i]	...	57.00	56.00	57.00	...	56.00
Bordeaux Mixture, drs	lb.	.11	.11½	.10½	.11	.08	.16

[h] Lowest price is for pulp, highest for high grade precipitated; [i] Crystals $6 per ton higher; USP, $15 higher in each case; * Freight is equalized in each case with nearest producing point.

use
HEYDEN CHEMICALS

FORMALDEHYDE
PARA FORMALDEHYDE
HEXAMETHYLENETETRAMINE
SALICYLIC ACID
METHYL SALICYLATE
BENZOIC ACID
BENZOATE OF SODA
BENZALDEHYDE
TOLYL ALDEHYDE
BENZAL CHLORIDE
BENZOYL CHLORIDE
BENZYL CHLORIDE
CREOSOTE
GUAIACOL
BROMIDES

FACTORY GARFIELD, N.J.

FINE HEYDEN CHEMICALS

FACTORY FORDS, N. J.

HEYDEN
CHEMICAL CORPORATION
50 UNION SQ., NEW YORK, N.Y.
180 N. WACKER DRIVE, CHICAGO, ILL.

Bromine
Chromium Fluoride

Prices

	Current Market	1937 Low	1937 High	1936 Low	1936 High
Bromine, cases ..... lb.	.30	.43	.30	.43	.30	.43
Bronze, Al, pwd, 300 lb drs lb.	.90½	.92½	.80	1.50	.80	1.50
Gold, blk ..... lb.	.45	.65	.40	.65	.40	.55
Butanes, com 16-32° group 3 tks ..... lb.	.02¼	.03¾	.02¼	.03¾	...	.04
Butyl, Acetate, norm drs, frt allowed ..... lb.	.10	.10½	.10	.10½	.09½	.12½
tks, frt allowed ..... lb.	...	.09	...	.09	.08½	.11
Secondary, tks, frt allowed ..... lb.	...	.07	.07	.07½	.07½	.096
drs, frt, allowed ..... lb.	.08	.08½	.08	.09	.106	.111
Aldehyde, 50 gal drs, wks ..... lb.	...	.17½	.16½	.17½	.19	.21
Carbinol, norm drs, wks lb.	.60	.75	.60	.75	.60	.75
Lactate ..... lb.	.22½	.23½	.22½	.23½	.22½	.23½
Oleate, drs, frt allowed .. lb.	...	.25	...	.25	...	...
Propionate, drs ..... lb.	.18	.18½	.18	.18½	.18	.18½
tks, delv ..... lb.	...	.17	.	.17	...	.17
Stearate, 50 gal drs .... lb.	...	.26	.25	.26	...	.26
Tartrate, drs ..... lb.	.55	.60	.55	.60	.55	.60
Butyraldehyde, drs, lcl, wks lb.	...	.35½	...	.35½	...	...
Cadmium Metal ..... lb.	1.60	nom.	1.05	1.60	.75	1.05
Sulfide, orange, boxes ... lb.	1.50	1.60	.90	1.60	.90	1.10
CALCIUM						
Calcium, Acetate, 150 lb bgs c-l, delv ..... 100 lb.	...	1.95	1.95	2.25	...	2.10
Arsenate, North and West, dealers, drs ... lb.	.06¾	.07¼	.06¼	.07¾	.06¼	.07¾
South, dealers, drs ... lb.	.06½	.07	.06½	.07	.06½	.06¾
Carbide, drs ..... lb.	.05	.06	.05	.06	.05	.06
Carbonate, tech, 100 lb bgs c-l ..... lb.	1.00	1.00	1.00	1.00	1.00	1.00
Chloride, flake, 375 lb drs, c-l, delv ..... ton	...	23.50	22.00	23.50	...	22.00
Solid, 650 lb drs, c-l, delv ..... ton	...	21.50	20.00	21.50	...	20.00
Ferrocyanide, 350 lb bbls wks ..... lb.	...	.17	...	.17	...	.17
Gluconate, Pharm, 125 lb bbls ..... lb.	.50	.57	.50	.57	.50	.57
Nitrate, 100 lb bgs .... ton	...	26.10	...	26.10	...	26.50
Palmitate, bbls ..... lb.	.22	.23	.22	.23	.21	.22
Phosphate, tech, 450 lb bbls ..... lb.	.06½	.07½	.06½	.07½	.07½	.08
Resinate, precip, bbls ... lb.	.13	.14	.13	.14	.13	.14
Stearate, 100 lb bbls ... lb.	.19	.21	.19	.21	.18	.21
Camphor, slabs ..... lb.	.55	.56	.54	.56	.50	.56
Powder ..... lb.	.55	.56	.54	.56	.4940	.56
Camwood, Bk, ground bbls lb.	.16	.18	.16	.18	.16	.18
Carbon Bisulfide, 500 lb drs lb.	.05	.05¾	.05	.05¾	.05¼	.08
Black, c-l, bgs, delv, price varying with zone† ... lb.	.0405	.0535	.0405	.0535	.0445	.0535
lcl, bgs, f.o.b. whse .. lb.	...	.06½	.06½	.07	...	.07
cartons, f.o.b. whse .. lb.	...	.07	.07	.07¾	...	.07¾
cases, f.o.b. whse .. lb.	...	.07¾	.07¾	.08¼	...	.08¼
Decolorizing, drs, c-l ... lb.	.08	.15	.08	.15	.08	.15
Dioxide, Liq 20-25 lb cyl lb.	.06	.08	.06	.08	.06	.08
Tetrachloride, 1400 lb drs, delv ..... lb.	.05¼	.06	.05¼	.06	.05¼	.06
Casein, Standard, Dom, grd lb.	.12	.13	.12	.20¾	.14½	.20¾
80-100 mesh, c-l, bgs .... lb.	.12½	.13½	.12½	.21¼	.15	.21¼
Castor Pomace, 5½ NH_3, c-l, bgs, wks ..... ton	...	21.00	21.00	25.00	15.00	20.00
Imported, ship, bgs .... ton	...	nom.	...	nom.	17.00	18.00
Celluloid, Scraps, ivory cs lb.	.12	.15	.12	.15	.17	.18
Transparent, cs ..... lb.	.12	.13	.12	.13	...	.20
Cellulose, Acetate, 50 lb kgs ..... lb.	...	.40	.40	.55	.55	.60
Chalk, dropped, 175 lb bbls lb.	.03	.03¼	.03	.03¾	.03	.03¾
Precip, heavy, 560 lb cks lb.	.03	.04	.03	.04	.03	.04
Light, 250 lb cks ..... lb.	.03¼	.04	.03	.04	.03	.04
Charcoal, Hardwood, lump, blk, wks ..... bu.	...	.15	...	.15	...	.15
Softwood, bgs, delv* .... ton	23.00	34.00	23.00	34.40	23.00	34.00
Willow, powd, 100 lb bbl, wks ..... lb.	.06	.07	.06	.07	.06	.06¼
Chestnut, clarified, tks, wks lb.	...	.02125	.01625	.02125	.01625	.01⅞
25%, bbls, wks ..... lb.	...	.0225	.02	.0225	.01½	.02
Pwd, 60%, 100 lb bgs, wks ..... lb.	...	.04⅞	...	.04⅞	...	.04⅞
China Clay, c-l, blk mines ton	...	6.50	...	6.50	...	7.00
Imported, lump, blk ... ton	22.00	25.00	22.00	25.00	15.00	25.00
Chlorine, cyls, lcl, wks, contract ..... lb.	.07½	.08½	.07½	.08½	.07½	.08½
cyls, c-l, contract ... lb. *j*	...	.05½	...	.05½	...	.05½
Liq, tk, wks, contract 100 lb.	...	2.15	...	2.15	...	2.15
Multi, c-l, cyls, wks, cont ..... lb.	2.30	2.55	2.30	2.55	2.30	2.55
Chloroacetophenone, tins, wks ..... lb.	3.00	3.50	3.00	3.50	...	3.00
Chlorobenzene, Mono, 100 lb drs, lcl, wks ..... lb.	.06	.07½	.06	.07½	.06	.07½
Chloroform, tech, 1000 lb drs ..... lb.	.20	.21	.20	.21	.20	.21
USP, 25 lb tins ..... lb.	.30	.31	.30	.31	.30	.31
Chloropicrin; comml cyls .. lb.	...	.80	...	.80	.85	.90
Chrome, Green, CP ..... lb.	.21	.24	.20	.24	.21½	.23
Yellow ..... lb.	.14½	.15½	.13	.16½	.11	.14
Chromium, Acetate, 8% Chrome, bbls ..... lb.	.05	.08	.05	.08	.06	.08
20° soln, 400 lb bbls ... lb.	...	.05½	...	.05½	...	.05½
Fluoride, powd, 400 lb bbl ..... lb.	.27	.28	.27	.28	.27	.28

j A delivered price; * Depends upon point of delivery; † New bulk price, tank cars ¼c per lb. less than bags in each zone.

Current

		Current Market		1937 Low	1937 High	1936 Low	1936 High
Coal tar, bbls	bbl.	7.50	8.00	6.75	9.00	7.25	9.00
Cobalt Acetate, bbls	lb.	.66	.68	.58	.68	.58	.60
Carbonate tech, bbls	lb.	...	1.63	1.42¾	1.63	1.35	1.48
Hydrate, bbls	lb.	...	1.78	1.60	1.78	1.66	1.76
Linoleate, solid, bbls	lb.	...	.31	.31	.33	.30	.31¼
Oxide, black, bgs	lb.	...	1.67	1.41	1.67	1.29	1.49
Resinate, fused, bbls	lb.	...	.13½	.13	.13½	.12½	.13
Precipitated, bbls	lb.	...	.34	.30½	.34	...	.32
Cochineal, gray or bk bgs	lb.	.35	.38	.32	.38	.32	.36
Teneriffe silver, bgs	lb.	.36	.39	.33	.39	.33	.37
Copper, metal, electrol 100 lb.		...	11.00	11.00	16.25	9.50	12.00
Carbonate, 400 lb bbls	lb.	.10½	.12½	.10½	.12½	...	.08¼
52-54% bbls	lb.	.15¾	.16¾	.15¾	.19	.14½	.16¼
Chloride, 250 lb bbls	lb.	.15	.17	.15	.18	.17	.18
Cyanide, 100 lb drs	lb.	.37	.38	.37	.38	.37	.38
Oleate, precip, bbls	lb.	...	.20	...	.20	...	.20
Oxide, black, bbls, wks	lb.	.17	.17½	.17	.18	.14½	.15¾
red 100 lb bbls	lb.	...	.19775	.17	.19975	.14	.15
Resinate, precip, bbls	lb.	.15	.16	.15	.19	.18	.19
Stearate, precip, bbls	lb.	.23	.24	.23	.40	.35	.40
Sub-acetate verdigris, 400 lb bbls	lb.	.18	.19	.18	.19	.18	.19
Sulfate, bbls, c-l, wks 100 lb.		...	4.50	4.50	6.00	3.85	4.55
Copperas, crys and sugar bulk c-l, wks	ton	12.00	13.00	12.00	13.00	13.00	16.00
Corn Sugar, tanners, bbls 100 lb.		3.30	3.40	3.30	4.34	3.08	4.03
Corn Syrup, 42°, bbls	100 lb.	...	3.26	3.26	4.36	3.05	3.95
43°, bbls	100 lb.	...	3.31	3.31	4.41	3.10	4.05
Cotton, Soluble, wet, 100 lb bbls	lb.	.40	.42	.40	.42	.40	.42
Cream Tartar, USP, powd & gran, 300 lb bbls	lb.	.19¾	.20¼	.15	.20¼	.15	.16¾
Creosote, USP, 42 lb cbys	lb.	.45	.47	.45	.47	.45	.47
Oil, Grade 1, tks	gal.	.13½	.14	.13	.14	.12½	.13½
Grade 2	gal.	.118	.128	.113	.128	.109	.12
Cresol, USP, drs	lb.	.12½	.13	.10	.13	.10	.10½
Crotonaldehyde, 98%, drs, wks	lb.	.26	.30	.26	.30	.26	.30
Cutch, Philippine, 100 lb bale	lb.	.04	.04¾	.04	.04¾	.04	.04¾
Cyanamid, bgs, c-l, frt allowed Ammonia unit		.	1.15	1.10	1.15	1.07½	1.10
Derris root 5% rotenone, bbls	lb.	.39	.47	.39	.47	...	...
Dextrin, corn, 140 lb bgs f.o.b., Chicago	100 lb.	3.55	4.15	3.55	5.00	3.45	5.00
British Gum, bgs	100 lb.	3.90	4.40	3.90	5.25	3.70	5.40
Potato, Yellow, 220 lb bgs	lb.	.07¾	.08¾	.07¾	.08¾	.07¾	.08¾
White, 220 lb bgs, lcl	lb.	.08	.09	.08	.09	.08	.09
Tapioca, 200 bgs, lcl	lb.	...	.08	...	.08	...	.08
White, 140 lb bgs	100 lb.	4.00	4.20	4.00	4.58	3.40	4.95
Diamylamine, c-l, drs, wks	lb.	.47	.75	.47	.75	.75	1.00
Diamylene, drs, wks	lb.	.095	.102	.095	.102	.095	.102
tks, wks	lb.	...	.08½	...	.08½	...	.08½
Diamylether, wks, drs	lb.	.085	.092	.085	.092	.085	.092
tks, wks	lb.	...	.075	...	.075	...	.075
Oxalate, lcl, drs, wks	lb.	...	.30	...	.30	...	...
Diamylphthalate, drs, wks	lb.	.20½	.21	.19	.21½	.18	.19½
Diamyl Sulfide, drs, wks	lb.	...	1.10	...	1.10	...	1.10
Dianisidine, bbls	lb.	2.25	2.45	2.25	2.45	2.25	2.45
Dibutoxy Ethyl Phthalate, drs, wks	lb.	...	.35	...	.35	...	...
Dibutylamine, lcl, drs, wks	lb.	...	.55	...	...	...	...
Dibutyl Ether, drs, wks, lcl	lb.	...	.30	...	.30	...	...
Dibutylphthalate, drs, wks, frt allowed	lb.	...	.21	.19½	.21	.18	.21
Dibutyltartrate, 50 gal drs	lb.	.35	.40	.35	.50	.35	.40
Dichlorethylene, drs	lb.	...	.25	.25	.29	.29	...
Dichloroethylether, 50 gal drs, wks	lb.	.15	.16	.15	.16	.16	.17
tks, wks	lb.	...	.14	...	.14	...	.15
Dichloromethane, drs, wks	lb.	...	.23	...	.23	...	.23
Dichloropentanes, drs, wks	lb.	no prices		no prices		.032	.040
tks, wks	lb.	no prices		no prices		...	.02½
Diethanolamine, tks, wks	lb.	...	.25	.25	.35	...	.30
Diethylamine, 400 lb drs	lb.	2.75	3.00	2.75	3.00	2.75	3.00
Diethylaniline, 850 lb drs	lb.	.50	.52	.50	.52	.50	.55
Diethyl Carbinol, drs	lb.	.60	.75	.60	.75	.60	.75
Diethylcarbonate, com drs	lb.	.31⅜	.35	.31⅜	.35	.31⅜	.35
90% grade, drs	lb.	...	.25	...	.25	...	.25
Diethylorthotoluidin, drs	lb.	.64	.67	.64	.67	.64	.67
Diethylphthalate, 1000 lb drs	lb.	.19	.19½	.18	.19½	.18	.19
Diethylsulfate, tech, drs, wks, lcl	lb.	...	.20	...	.20	...	.20
Diethyleneglycol, drs	lb.	.22	.23	.16½	.23	.15½	.17½
Mono ethyl ethers, drs	lb.	.16	.17	.16	.17	.15	.17
tks, wks	lb.	...	.15	...	.15	...	.15
Mono butyl ether, drs	lb.	...	.26	...	.26	...	.26
Diethylene oxide, 50 gal drs, wks	lb.	.20	.24	.20	.24	.20	.24
Diglycol Oleate, bbls	lb.	...	.21	.21	.24	...	.24
Laurate, bbls	lb.	...	.27½	...	...	...	...
Stearate, bbls	lb.	...	.27½	...	...	...	...
Dimethylamine, 400 lb drs, pure 25 & 40% sol 100% basis	lb.	...	1.00	...	.95	...	.95
Dimethylaniline, 340 lb drs	lb.	.26	.27	.26	.27	.26	.30
Dimethyl Ethyl Carbinol, drs	lb.	.60	.75	.60	.75	.60	.75
Dimethyl phthalate, drs, wks, frt allowed	lb.	...	.21	.20½	.21	.19½	.21½
Dimethysulfate, 100 lb drs	lb.	.45	.50	.45	.50	.45	.50
Dinitrobenzene, 400 lb bbls	lb. *k*	.16	.19	.16	.19	.16	.19½
Dinitrochlorobenzene, 400 lb bbls	lb.	.16½	.17½	.16	.17½	.14	.15½
Dinitronaphthalene, 350 lb bbls	lb.	.35	.38	.35	.38	.34	.37
Dinitrophenol, 350 lb bbls	lb.	.23	.24	.23	.24	.23	.24
Dinitrotoluene, 300 lb bbls	lb.	.14½	.15½	.14¼	.15½	.14½	.16½

k Higher price is for purified material.

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Prices

		Current Market	1937 Low	1937 High	1936 Low	1936 High
Diphenyl, bbls	lb.	.15	.15	.25	.15	.25
Diphenylamine	lb.	.31	.31	.32	.31	.32
Diphenylguanidine, 100 lb drs	lb.	.35	.35	.37	.35	.37
Dip Oil, see Tar Acid Oil.						
Divi Divi pods, bgs shipmt	ton	34.00	34.00	nom.	32.00	45.00
Extract	lb.	.05	.05	.05½	.05	.05½
EGG YOLK						
Egg Yolk, dom., 200 lb cases	lb.	.68	.68	nom.	.63	.68
Imported	lb.	.60	.53	.60	.48	.56
Epsom Salt, tech, 300 lb bbls						
c-l NY	100 lb.	1.90	1.80	2.10	1.80	2.00
USP, c-l, bbls	100 lb.	...	2.00	2.10	...	2.00
Ether, USP anaesthesia 55 lb drs	lb.	.22	.22	.23	.22	.23
(Conc)	lb.	.09	.09	.10	.09	.10
Isopropyl 50 gal drs	lb.	.07	.07	.08	.07	.08
tks, frt allowed	lb.	...	.06	.06	...	.06
Nitrous, conc, bottles	lb.	...	.68	.77	.75	.77
Synthetic, wks, drs	lb.	.08	.09	.09	.08	.09
Ethyl Acetate, 85% Ester tks, frt alld	lb.	...	.06½	.06½	.06½	.08
drs, frt alld	lb.	...	.07½	...	.07½	.09
95%, tks, frt allowed	lb.	...	.06¾	.06¾	.07	.08½
drs, frt alld	lb.	...	.07¾	.07¾	.08	.10
Acetoacetate, 110 gal drs	lb.	...	.27½	.27½	.37	.68
Benzylaniline, 300 lb drs	lb.	.86	.88	.86	.88	.86	.88
Bromide, tech, drs	lb.	.50	.55	.50	.55	.50	.55
Cellulose, drs, wks, frt allowed	lb.	.70	1.00	...	...	...	...
Chloride, 200 lb drs	lb.	.22	.24	.22	.24	.22	.24
Chlorocarbonate, cbys	lb.	...	.30	...	.30	...	.30
Crotonate, drs	lb.	1.00	1.25	1.00	1.25	1.00	1.25
Formate, drs, frt allowed	lb.	.27	.28	.27	.31	...	...
Lactate, drs, wks	lb.	...	.33	...	.33	.25	.29
Methyl Ketone, 50 gal drs, frt allowed	lb.	.07	.07½	.07	.07½	.07	.09
tks, frt allowed	lb.	...	.06½	...	.06½	.06½	.07½
Oxalate, drs, wks	lb.	.30	.34	.30	.34	.37½	.55
Oxybutyrate, 50 gal drs, wks	lb.	.30	.30½	.30	.30½	.30	.30½
Silicate, drs, wks	lb.	...	.77	...	.77	...	...
Ethylene Dibromide, 60 lb drs	lb.	.65	.70	.65	.70	.65	.70
Chloryhdrin, 40%, 10 gal cbys chloro, cont	lb.	.75	.85	.75	.85	.75	.85
Anhydrous	lb.	...	.75	...	.75	...	.75
Dichloride, 50 gal drs, wks	lb.	.0545	.0994	.0545	.0994	.0545	.0994
Glycol, 50 gal drs, wks	lb.	.17	.21	.17	.21	.17	.21
tks, wks	lb.	...	.16	...	.16	...	.16
Mono Butyl Ether, drs, wks	lb.	.20	.21	.20	.21	.20	.21
tks, wks	lb.	...	.19	...	.19	...	.19
Mono Ethyl Ether, drs, wks	lb.	.16	.17	.16	.17	.16	.17
tks, wks	lb.	...	.15	...	.15	...	.15
Mono Ethyl Ether Acetate, drs, wks	lb.	...	.14	...	.14	.14	.18½
tks, wks	lb.	...	.13	...	.13	.13	.16½
Mono, Methyl Ether, drs wks	lb.	.18	.22	.18	.22	.19	.23
tks, wks	lb.	...	.17	...	.17	...	.18
Oxide, cyl	lb.	.50	.55	.50	.55	.50	.60
Ethylidenaniline	lb.	.45	.47½	.45	.47½	.45	.47½
Feldspar, blk pottery	ton	...	14.50	...	14.50	...	14.50
Powd, blk, wks	ton	14.00	14.50	14.00	14.50	14.00	14.50
Ferric Chloride, tech, crys, 475 lb bbls	lb.	.05	.07½	.05	.07½	.05	.07½
sol, 42° cbys	lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
Fish Scrap, dried, unground, wks	unit *l*	no prices		3.50	4.25	2.50	3.50
Acid, Bulk, 6 & 3%, delv Norfolk & Baltimore basis	unit *m*	...	2.90	3.00	3.15	...	2.25
Fluorspar, 98%, bgs	lb.	no prices		no prices		30.00	35.50
Formaldehyde, USP, 400 lb bbls, wks	lb.	.05¾	.06¼	.05¾	.06¼	.05¾	.07
Fossil Flour	lb.	.02½	.04	.02½	.04	.02½	.04
Fullers Earth, blk, mines	ton	6.50	15.00	6.50	15.00	6.50	15.00
Imp powd, c-l, bgs	ton	23.00	30.00	23.00	30.00	23.00	30.00
Furfural (tech) drs, wks	lb.	.10	.15	.10	.15	.10	.15
Furfuramide (tech) 100 lb drs	lb.	...	.30	...	.30	...	.30
Fusel Oil, 10% impurities	lb.	.16	.18	.16	.18	.16	.18
Fustic, crystals, 100 lb boxes	lb.	.22	.26	.20	.26	.20	.23
Liquid 50°, 600 lb bbls	lb.	.09½	.13	.08½	.13	.08½	.12
Solid, 50 lb boxes	lb.	.17½	.19½	.16	.19½	.16	.18
G SALT PASTE							
G Salt paste, 360 lb bbls	lb.	.45	.47	.45	.47	.45	.47
Gall Extract	lb.	.19	.20	.19	.20	.18	.20
Gambier, com 200 lb bgs	lb.	...	nom.	...	nom.	...	.06
Singapore cubes, 150 lb bgs	100 lb.	...	.10½	.09½	.10½	.08	.09
Gelatin, tech, 100 lb cs	lb.	.45	.50	.45	.55	.50	.55
Glauber's Salt, tech, c-l, bgs, wks*	100 lb.	.95	1.15	.95	1.15	.95	1.30
Anhydrous, see Sodium Sulfate.							
Glue, bone, com grades, c-l bgs	lb.	.14	.17½	.11	.17½	.10½	.17½
Better grades, c-l, bgs	lb.	.15½	.17½	.12½	.17½	.12	.17½
Casein, kgs	lb.	.18	.22	.18	.22	.18	.22

l + 10; *m* + 50; *Bbls. are 20c higher.

		Current Market		1937 Low	1937 High	1936 Low	1936 High
Glycerin, CP, 550 lb drs	lb.	.19½	.22	.19½	.29	.16	.21½
Dynamite, 100 lb drs	lb.	.19½	.20	.19½	.29	.13¾	.21½
Saponification, drs	lb.	.14½	.15	.14½	.29	.10¼	.22
Soap Lye, drs	lb.	.13	.13½	.13	.27	.09¼	.20
Glyceryl Bori-Borate, bbls	lb.	...	.40	...	...	...	...
Monoricinoleate, bbls	lb.	...	.27	...	...	...	...
Monostearate, bbls	lb.	...	.30	...	...	...	...
Oleate, bbls	lb.	...	.22	...	...	...	...
Phthalate	lb.	...	.37	.29	.37	.28	.29
Glyceryl Stearate, bbls	lb.	...	.18	...	.18	...	.18
Glycol Bori-Borate, bbls	lb.	...	.26	...	...	...	...
Phthalate, drs	lb.	...	.40	.29	.40	.29	.35
Stearate, drs	lb.	...	.27½	.23	.27½	...	.23
GUMS							
Gum Aloes, Barbadoes	lb.	.85	.90	.85	.90	.85	.90
Arabic, amber sorts	lb.	.11¾	.12	.10½	.15½	.09	.10¾
White sorts, No. 1, bgs	lb.	.24	.25	.24	.30	.25	.28
No. 2, bgs	lb.	.22	.23	.22	.28	.24	.26
Powd, bbls	lb.	.15	.16	.14	.19	.13	.14
Asphaltum, Barbadoes (Manjak) 200 lb bgs, f.o.b., NY	lb.	.02½	.10½	.02½	.10½	.02½	.10½
California, f.o.b., NY, drs	ton	29.00	55.00	29.00	55.00	29.00	55.00
Egyptian, 200 lb cases, f.o.b., NY	lb.	.12	.15	.12	.15	.12	.15
Benzoin Sumatra, USP, 120 lb cases	lb.	.15	.25	.15	.25	.15	.19
Copal, Congo, 112 lb bgs, clean, opaque	lb.	...	.19¼	.18⅞	.19¼	.18½	.20
Dark amber	lb.	...	.08⅞	.06⅞	.09¼	.06⅞	.08
Light amber	lb.	...	.13¾	.10¼	.14⅜	.10¼	.14⅛
Copal, East India, 180 lb bgs							
Macassar pale bold	lb.	...	.13	...	.13	.12⅝	.14
Chips	lb.	...	.05¾	.05¾	.06½	.06⅛	.06½
Dust	lb.	.03⅝	.04⅛	.03⅝	.04⅛	.03⅝	.04⅛
Nubs	lb.	...	.10¾	.10¾	.11¼	.10⅜	.11⅛
Singapore, Bold	lb.	...	.15⅝	...	.15⅝	.15⅛	.16⅞
Chips	lb.	...	.04¾	.04¼	.05	.04⅜	.05¼
Dust	lb.	.03⅝	.04⅛	.03⅝	.04⅛	.03⅝	.04⅛
Nubs	lb.	...	.10⅜	.10⅜	.10¾	.10	.11¼
Copal Manilla, 180-190 lb baskets, Loba A	lb.	...	.12	.09¾	.12	.09¼	.13
Loba B	lb.	...	.11⅝	.09¼	.11⅝	.08⅞	.12
Loba C	lb.	...	.11¼	.08⅞	.11¼	.08⅜	.11⅜
DBB	lb.	...	.08¾	.08	.08¾	.07⅝	.08⅞
Dust	lb.	...	.06⅝	.05¾	.06⅝	.05	.06⅛
MA sorts	lb.	...	.07¼	.06¾	.07¼	.06¾	.07⅝
Copal Pontianak, 224 lb cases, bold genuine	lb.	...	.16½	.15½	.16½	.14¼	.16
Chips	lb.	...	.10¼	.09⅛	.11⅜	.07	.08½
Mixed	lb.	...	.14	.13½	.14	.13¼	.13¾
Nubs	lb.	...	.12⅞	.12¼	.13½	.10¼	.12
Split	lb.	...	.14⅝	.13½	.15¼	.12¾	.13
Dammar Batavia, 136 lb cases							
A	lb.	...	.25½	.23½	.25½	.21⅜	.22¼
B	lb.	...	.24	.22⅛	.24	.20⅜	.21½
C	lb.	...	.20⅜	.18½	.20⅜	.16½	.17⅝
D	lb.	...	.17½	.15¼	.17½	.13⅝	.14⅜
A/D	lb.	...	.20⅜	.17⅝	.20⅜	.15½	.17⅛
A/E	lb.	...	.17¼	.14⅞	.17¼	.12⅞	.14½
E	lb.	...	.08½	.07½	.08½	.06¾	.07⅛
F	lb.	...	.07¼	.06¼	.07¼	.05⅞	.06⅞
Singapore, No. 1	lb.	...	.21½	.17⅛	.21½	.16¼	.17½
No. 2	lb.	...	.16¼	.14⅛	.16¼	.13	.14¼
No. 3	lb.	...	.05¾	.	.05¾	.05¼	.05¾
Chips	lb.	...	.13½	.10¼	.13½	.09¾	.09¾
Dust	lb.	...	.05¾	.05¾	.06	.04¼	.05⅝
Seeds	lb.	...	.09½	.07⅞	.09½	.06⅝	.07⅜
Elemi, cons	lb.	.09⅜	.09½	.09⅜	.10¼	.09¾	.10¼
Ester	lb.	.09½	.10	.09½	.12	.07⅝	.10
Gamboge, pipe, cases	lb.	.80	nom.	.58	.80	.58	.59
Powd, bbls	lb.	...	.85	.65	.85	.65	.66
Ghatti, sol. bgs	lb.	.11	.15	.11	.15	.11	.15
Karaya, powd, bbls, xxx	lb.	.27	.30	.24	.30	.24	.25
xx	lb.	.18	.19	.16	.19	.16	.17
No. 1	lb.	.12	.13	.09½	.13	.09½	.10
No. 2	lb.	.11	.12	.08½	.12	.08½	.09
Kauri, NY, San Francisco, Brown XXX, cases	lb.	.60	.60½	.60	.60½	.60	.60½
BX	lb.	...	.38	.33	.38	.33	.33½
B1	lb.	...	.28	.21	.28	.19	.21
B2	lb.	...	.24	.15½	.26	.14½	.15½
B3	lb.	...	.18½	.12	.18½	.12	.12½
Pale XXX	lb.	...	.61	.61	.65½	.65	.65½
No. 1	lb.	...	.41	.40	.41	.40	.40½
No. 2	lb.	...	.24	.22	.24	.22	.22½
No. 3	lb.	...	.17¾	.15	.17¾	.15	.15½
Kino, tins	lb.	2.00	2.10	.70	2.10	.70	.80
Mastic	lb.	.55	.56	.55	.58	.56	.60½
Sandarac, prime quality, 200 lb bgs & 300 lb cks	lb.	.25	.26	.25	.35	.19¼	.38
Senegal, picked bgs	lb.	.27	.29	.20	.29	.20	.21
Sorts	lb.	.13	.13½	.09¾	.15	.09¾	.12½
Thus, bbls	280 lbs.	13.75	14.00	12.00	14.00	11.00	12.00
Strained	280 lbs.	...	14.00	12.00	14.00	11.00	12.00
Tragacanth, No. 1, cases	lb.	2.75	3.00	2.40	3.25	1.20	2.50
No. 2	lb.	2.40	2.75	2.00	2.75	1.10	2.10
No. 3	lb.	2.35	2.70	1.95	2.70	.95	2.05
No. 4	lb.	2.30	2.65	1.85	2.65	.85	1.95
No. 5	lb.	2.25	2.50	1.65	2.50	.75	1.75
Yacca, bgs	lb.	.03½	.04½	.03¼	.04½	.03¼	.03¾
Helium, cyl (200 cu. ft.)	cyl.	...	25.00	...	25.00	...	25.00
Hematine crystals, 400 lb bbls	lb.	.18	.34	.16	.34	.16	.34
Hemlock, 25%, 600 lb bbls, wks	lb.	.03	.03¼	.03	.03¼	...	.02⅞
tks	lb.	...	.02¾	...	.02¾	...	.02½

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Prices

	Current Market	1937 Low	1937 High	1936 Low	1936 High
Hexalene, 50 gal drs, wks lb.	...	.30	...	.30	...	.30
Hexane, normal 60-70° C. Group 3, tks ....gal.	...	.10½	...	.10½	...	.12
Hexamethylenetetramine, powd, drs ....lb.	.35	.36	.35	.36	.35	.39
Hexyl Acetate, secondary, delv, drs ....lb.	.13	.13½	.13	.13½	.13	.13½
tks ....lb.	...	.12	...	.12	...	.11½
Hoof Meal, f.o.b. Chicago unit	...	3.20	3.20	3.75	2.35	3.00
Hydrogen Peroxide, 100 vol, 140 lb cbys ....lb.	.20	.21	.20	.21	.20	.21
Hydroxyamine Hydrochloride ....lb.	...	3.15	...	3.15	...	3.15
Hypernic, 51°, 600 lb bbls lb.	.16	.21	.15	.21	.17	.20
INDIGO						
Indigo, Bengal, bbls ....lb.	...	2.40	...	2.40	...	...
Synthetic, liquid ....lb.	.16½	.19	.16½	.19	.13	.14
Iodine, Resublimed, kgs ...lb.	1.50	1.60	1.50	1.60	1.50	1.75
Irish Moss, ord, bales ....lb.	.11	.12	.11	.12	.09	.10
Bleached, prime, bales ..lb.	.19	.20	.19	.21	.18	.19
Iron Acetate Liq. 17°, bbls lb.	.03	.04	.03	.04	.03	.04
Chloride see Ferric Chloride.						
Nitrate, coml, bbls ..100 lb.	2.32	3.11	2.32	3.25	2.75	3.25
Isobutyl Carbinol (128-132°C) drs, wks ....lb.	.33	.34	.33	.34	.33	.34
tks, wks ....lb.	...	.32	...	.32	...	.32
Isopropyl Acetate, tks, frt allowed ....lb.	...	.06½	...	.06½	.06	.07½
drs, frt allowed ....lb.	.07½	.08	.07½	.08	.07	.09
Ether, see Ether, isopropyl.						
Keiselguhr, 95 lb bgs, NY, Brown ....ton	60.00	70.00	60.00	70.00	60.00	70.00
LEAD ACETATE						
Lead Acetate, f.o.b. NY, bbls, White, broken ....lb.	...	.12	.11½	.13½	.11	.11½
cryst, bbls ....lb.	...	.12	.11½	.13½	.10½	.11½
gran, bbls ....lb.	...	.12¾	.12¼	.14¼	.11	.12¼
powd, bbls ....lb.	...	.12¾	.12¼	.14¼	.11¼	.12¼
Arsenate, East, drs ....lb.	.13	.13½	.11	.13½	.09	.10
Linoleate, solid, bbls ...lb.	...	.19	.18	.19	.18	.26½
Metal, c-l, NY ....100 lb.	...	5.00	5.00	7.05	4.50	6.00
Nitrate, 500 lb bbls, wks lb.	.11	.11½	.09	.11½	.09	.09½
Oleate, bbls ....lb.	.18½	.20	.15	.20	.15	.16
Red, dry, 95% Pb_3O_4, delv ....lb.	...	.07½	.07½	.0945	.07	.085
97% Pb_3O_4, delv ....lb.	...	.07¾	.07¾	.09¾	.07¼	.08¾
98% Pb_3O_4, delv ....lb.	...	.08	.08½	.10	.07½	.09
Resinate, precip, bbls ...lb.	...	.16½	.14	.16½	...	.14
Stearate, bbls ....lb.	.22	.23	.22	.23	.22	.23
Titanate, bbls, c-l, f.o.b. wks, frt allowed ....lb.	...	.12	.10	.12	...	...
White, 500 lb bbls, wks..lb.	...	.07½	.07¼	.09	.06½	.07¼
Basic sulfate, 500 lb bbls, wks ....lb.	...	.07	.06¾	.08¾	.06	.06½
Lime, chemical quicklime, f.o.b., wks, bulk ....ton	7.00	8.00	6.00	8.00	7.00	7.25
Hydrated, f.o.b., wks ..ton	8.50	12.00	8.00	12.00	8.50	12.00
Lime Salts, see Calcium Salts.						
Lime sulfur, dealers, tks..gal.	...	.11	...	.11	...	.11
drs ....gal.	.13	.16	.13	.16	.13	.16
Linseed Meal, bgs ....ton	40.50	41.00	35.00	42.50	29.00	40.50
Litharge, coml, delv, bbls..lb.	...	.06½	.06½	.08½	.06	.075
Lithopone, dom, ordinary, delv, bgs ....lb.	.04⅜	.04⅜	.04¼	.04⅝	.04¼	.04¾
bbls ....lb.	.04⅝	.04⅞	.04½	.04⅞	.04½	.05
High strength, bgs ....lb.	.05⅞	.06⅛	.05¾	.06⅛	.05¾	.06¼
bbls ....lb.	.06⅛	.06⅜	.06	.06⅜	.06	.06½
Titanated, bgs ....lb.	.05⅞	.06⅛	.05¾	.06⅛	.05¾	.06¼
bbls ....lb.	.06⅛	.06⅜	.06	.06⅜	.06	.06½
Logwood, 51°, 600 lb bbls lb.	.09½	.11½	.08½	.11½	.06½	.10½
Solid, 50 lb boxes ....lb.	.15	.19	.15	.17½	.13½	.17½
Sticks ....ton	24.00	25.00	24.00	25.00	24.00	26.00
MADDER						
Madder, Dutch ....lb.	.22	.25	.22	.25	.22	.25
Magnesite, calc, 500 lb bbl ton	60.00	65.00	60.00	65.00	60.00	65.00
Magnesium Carb, tech, 70 lb bgs, wks ....lb.	.06¼	.07	.06	.07	.06	.06½
Chloride flake, 375 lb drs, c-l, wks ....ton	39.00	42.00	39.00	42.00	36.00	42.00
Fluosilicate, crys, 400 lb bbls, wks ....lb.	.10	.10½	.10	.10½	.10	.10½
Oxide, USP, light, 100 lb bbls ....lb.	.36	.40	.36	.40	...	.42
Heavy, 250 lb bbls ...lb.	...	.50	...	.50	...	.50
Palmitate, bbls ....lb.	.33	nom.	.33	nom.	.23	.24
Silicofluoride, bbls ....lb.	.09½	.10½	.09½	.10½	...	...
Stearate, bbls ....lb.	.21	.24	.21	.24	.20	.24
Manganese acetate, drs ...lb.	...	.26½	.25½	.26½	...	...
Borate, 30%, 200 lb bbls lb.	.15	.16	.15	.16	.15	.16
Chloride, 600 lb cks ....lb.	.09	.12	.09	.12	.09	.12
Dioxide, tech (peroxide), paper bgs, c-l ....ton	...	62.50	47.50	62.50	...	47.50
Hydrate, bbls ....lb.	...	.32	...	.32	...	...
Linoleate, liq, drs ....lb.	.18	.19¼	.18	.19¼	...	...
solid, precip, bbls ....lb.	...	.19	.17½	.19	...	...
Resinate, fused, bbls ....lb.	.08¼	.08½	.08¼	.08½	...	...
precip, drs ....lb.	...	.12	...	.12	...	...
Sulfate, tech, anhyd, 90-95%, 550 lb drs ....lb.	.07	.07½	.07	.07½	...	...
Mangrove, 55%, 400 lb bbls lb.	...	.04	...	.04	...	.04
Bark, African ....ton	26.50	27.00	25.00	27.00	25.50	27.00

	Current Market	1937 Low	1937 High	1936 Low	1936 High
Mannitol, pure cryst, cs, wks lb.	...	1.45	1.45	1.48	1.48	1.60
Marble Flour, blk .....ton	12.00	13.00	12.00	13.00	12.00	13.00
Mercury chloride (Calomel) lb.	1.50	1.59	1.05	1.60	.81	1.20
Mercury metal ...76 lb. flasks	83.00	84.00	83.00	99.00	73.50	95.00
Meta-nitro-aniline .....lb.	.67	.69	.67	.69	.67	.69
Meta-nitro-paratoluidine 200 lb bbls .....lb.	1.45	1.55	1.45	1.55	1.40	1.55
Meta-phenylene-diamine 300 lb bbls .....lb.	.80	.84	.80	.84	.80	.84
Meta-toluene-diamine, 300 lb bbls .....lb.	.65	.67	.65	.67	.65	.69
Methanol, denat, grd, drs, c-l, frt all'd .....gal.	...	.38	.38	.53	...	...
tanks, frt all'd .....gal.	...	.32	.32	.48	...	...
Pure, drs, c-l, frt all'd gal.	...	.38	...	.38	...	...
tanks .....gal.	...	.33	...	.33	...	...
95%, tks .....gal.	...	.31	...	.31	...	...
97%, tks .....gal.	...	.32	...	.32	...	...
Methyl Acetate, dom, 98-100%, drs .....lb.	.16	.17½	.16	.17½	.11	.18½
Acetone, frt all'd, drs gal. *p*	.34½	.40½	.34½	.58½	.45½	.68½
tks, frt allowed, drs gal. *p*	.28½	.32½	.28½	.44½	.41	.48
Synthetic, frt all'd, east of Rock M., drs .....gal. *p*	.42	.51	.42	.59½	.52½	.60
tks, frt all'd ....gal.	.36	.39½	.36	.49½	.48	.53
West of Rocky M., frt all'd, drs ..gal. *p*	...	.46	.46	.58	.55½	.69
tks, frt all'd ..gal. *p*	...	.39½	.39½	.51	.51	.63½
Anthraquinone .....lb.	.65	.67	.65	.67	.65	.67
Butyl Ketone, tks .....lb.	...	.10½	...	.10½	...	.10½
Chloride, 90 lb cyl .....lb.	.32	.40	.32	.43	...	.45
Ethyl Ketone, tks .....lb.	...	.07½	...	.07½	...	.07½
Formate, drs, frt allowed lb.	.35	.36	.35	.39	...	...
Hexyl Ketone, pure, drs lb.	...	.60	...	.60	...	.60
Lactate, drs, frt allowed lb.	...	.30	...	.30	...	...
Propyl carbinol, drs ....lb.	.60	.75	.60	.75	.60	.75
Mica, dry grd, bgs, wks ..lb.	35.00	...	35.00	...	35.00	...
Michler's Ketone, kgs ....lb.	...	2.50	...	2.50	...	2.50
Molasses, blackstrap, tks, f.o.b. NY .....gal.	...	.07	.07	.07¼	.07	.08¼
Monoamylamine, c-l, drs, wks lb.	.52	1.00	.52	1.00	...	1.00
Monobutylamine, lcl, drs, wks .....lb.	...	.65	...	...	...	...
Monochlorobenzene, see Chlorobenzene, mono.						
Monoethanolamine, tks, wks lb.	...	.25	.25	.30	...	.30
Monomethylamine, drs, frt all'd, E. Mississippi, c-l ..lb.	...	.65	...	.65	...	...
Monomethylparaminosulfate, 100 lb drs .....lb.	3.75	4.00	3.75	4.00	3.75	4.00
Myrobalans 25%, liq bbls..lb.	...	.04¼	...	.04¼	...	.04¼
50% Solid, 50 lb boxes lb.	.06	.06¼	.06	.06¼	.06	.06¼
J1 bgs .....ton	...	30.00	26.50	30.00	22.00	26.50
J2 bgs .....ton	...	22.50	19.00	22.50	14.25	16.75
R2 bgs .....ton	...	22.00	18.75	22.00	14.00	16.25
NAPHTHA						
Naphtha, v.m.&p. (deodorized) see petroleum solvents.						
Naphtha, Solvent, water-white, tks .....gal.	...	.31	...	.31	...	.31
drs, c-l .....gal.	...	.36	...	.36	...	.36
NAPHTHALENE						
Naphthalene, dom, crude, bgs, wks .....lb.	...	2.60	2.00	3.00	2.75	4.50
Imported, cif, bgs ....lb.	...	2.20	2.20	3.00	...	...
Balls, flakes, pks .....lb.	...	.08	...	.08	.07¼	.08
Balls, ref'd, bbls, wks ..lb.	...	.07¼	...	.07¼	.06¾	.07¼
Flakes, ref'd, bbls, wks..lb.	...	.07¼	...	.07¼	.06¾	.07¼
Nickel Carbonate, bbls....lb.	.36	.37½	.36	.37½	...	.36
Chloride, bbls .....lb.	.18	.20	.18	.20	.18	.19
Metal ingot .....lb.	...	.35	...	.35	...	.35
Oxide, 100 lb kgs, NY..lb.	.35	.37	.35	.37	.35	.37
Salt, 400 lb bbls, NY ....lb.	.13	.13½	.13	.13½	.13	.13½
Single, 400 lb bbls, NY lb.	.13	.13½	.13	.13½	.13	.13½
Nicotine, 40%, drs, sulfate, 55 lb drs .....lb.	...	.76	...	.76	.75	1.17
Nitre Cake, blk .....ton	...	16.00	...	16.00	12.00	14.00
Nitrobenzene, redistilled, 1000 lb drs, wks .....lb.	.08	.10	.08	.10	.08	.11
tks .....lb.	...	.07½	...	.07½	...	.08½
Nitrocellulose, c-l-l c-l, wks lb.	.22	.29	.26	.29	.26	.34
Nitrogenous Mat'l, bgs, imp unit	...	2.70	2.70	3.55	2.00	3.10
dom, Eastern wks ....unit	2.70	2.80	2.70	4.25	1.90	3.00
dom, Western wks ....unit	...	2.25	2.25	3.75	1.85	2.75
Nitronaphthalene, 550 lb bbls lb.	.24	.25	.24	.25	.24	.25
Nutgalls Alleppo, bgs .....lb.	no prices		.20	.22	.16	.18
Chinese, bgs .....lb.	no prices		.20	.22	.19	.20
OAK BARK						
Oak Bark Extract, 25%, bbls lb.	...	.03¼	...	.03¼	...	.03½
tks .....lb.	...	.02¾	...	.02¾	...	.02¾
Octyl Acetate, tks, wks ...lb.	.16	.17	.16	.17	...	.15
Orange-Mineral, 1100 lb cks NY .....lb.	...	.10¾	.10¾	.12¾	.10	.11¼
Orthoaminophenol, 50 lb kgs. lb.	2.15	2.25	2.15	2.25	2.15	2.25
Orthoanisidine, 100 lb drs lb.	.70	.74	.70	.74	.82	.84
Orthochlorophenol, drs ....lb.	.35	.75	.35	.75	.50	.65
Orthocresol, drs, wks .....lb.	.13½	.14½	.13½	.14½	.13	.15
Orthodichlorobenzene, 1000 lb drs .....lb.	.06	.07	.05	.07	.05	.11½

o Country is divided in 4 zones, prices varying by zone; *p* Country is divided into 4 zones. Also see footnote directly above; *q* Naphthalene quoted on Pacific Coast F.A.S. Phila. or N. Y.

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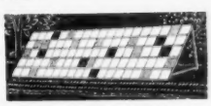

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Orthonitrochlorobenzene
Phloroglucinol

Prices

		Current Market	1937 Low	1937 High	1936 Low	1936 High
Orthonitrochlorobenzene, 1200 lb drs, wks	lb.	.28	.28	.29	.28	.29
Orthonitroparachlorphenol, tins	lb.	.70	.70	.75	.70	.75
Orthonitrophenol, 350 lb drs	lb.	.85	.85	.90	.52	.80
Orthonitrotoluene, 1000 lb drs, wks	lb.	.07	.07	.10	.07	.10
Orthotoluidine, 350 lb bbls, l-c-l	lb.	.16	.14	.17	.14	.15
Osage Orange, cryst, bbls	lb.	.17	.17	.25	.17	.25
51° liquid	lb.	.07	.07	.08	.07	.07¾
Paraffin, rfd, 200 lb cs slabs						
122-127° M P	lb.	.0445	.0445	.04½	.0445	.04½
128-132° M P	lb.	.04¾	.04¾	.049	.04¾	.049
133-137° M P	lb.	.05½	.05½	.05¾	.05½	.05¾
Para aldehyde, 110-55 gal drs	lb.	.16	.16	.18	.16	.18
Aminoacetanilid, 100 lb kgs	lb.	...	.85	...	.85	... .85
Aminohydrochloride, 100 lb kgs	lb.	1.25	1.25	1.30	1.25	1.30
Aminophenol, 100 lb kgs	lb.	...	1.05	...	1.05	... 1.05
Chlorophenol, drs	lb.	.30	.30	.45	.50	.65
Dichlorobenzene, 200 lb drs, wks	lb.	.11	.11	.20	.16	.20
Formaldehyde, drs, wks	lb.	.34	.34	.35	.34	.39
Nitroacetanilid, 300 lb bbls	lb.	.45	.45	.52	.45	.52
Nitroaniline, 300 lb bbls, wks	lb.	.45	.45	.47	.47	.51
Nitrochlorobenzene, 1200 lb drs, wks	lb.	.23½	.23½	.24	.23½	.24
Nitro-orthotoluidine, 300 lb bbls	lb.	2.75	2.75	2.85	2.75	2.85
Nitrophenol, 185 lb bbls	lb.	.35	.35	.37	.45	.50
Nitrosodimethylaniline, 120 lb bbls	lb.	.92	.92	.94	.92	.94
Nitrotoluene, 350 lb bbls	lb.	...	.35	...	.35	.36 .37
Para Tertiary amyl phenol, wks, drs, c-l	lb.	...	.26	...	.26	.26 .50
Phenylenedamine, 350 lb bbls	lb.	1.25	1.30	1.25	1.30	1.25 1.30
Toluenesulfonamide, 175 lb bbls	lb.	.70	.75	.70	.75	.70 .75
tks, wks	lb.	...	.31	...	.31	... .31
Toluenesulfonchloride, 410 lb bbls, wks	lb.	.20	.22	.20	.22	.20 .22
Toluidine, 350 lb bbls, wks	lb.	.56	.58	.56	.58	.56 .60
Paris Green, dealers, drs	lb.	.25½	.26½	.22	.26½	... .24
Pentane, normal, 28-38° C, group 3, tks	gal.	...	.08¼	.08¼	.09½	.09 .09½
drs, group 3	gal.	.14	.16	.12½	.16	.10 .16
Perchlorethylene, 100 lb drs, frt allowed	lb.	...	.10½	...	.10½	.10½ .15
Petrolatum, dark amber, bbls	lb.	.02⅞	.03	.02¾	.03	.02¾ .02⅞
Light, bbls	lb.	.03⅛	.03⅜	.03⅛	.03⅜	.03⅛ .03⅜
Medium, bbls	lb.	.02⅞	.03⅛	.02⅞	.03⅛	.02⅞ .03⅛
Dark green, bbls	lb.	.02½	.02¾	.02½	.02¾	.02½ .02¾
Red, bbls	lb.	.02⅝	.03¼	.02⅛	.03¼	.02⅛ .02⅝
White, lily, bbls	lb.	.06	.06¼	.06	.06¼	.06 .06¼
White, snow, bbls	lb.	.07	.07¼	.07	.07¼	.07 .07¼
Petroleum Ether, 30-60°, group, 3 tks	gal.	...	.13	...	.13	... .13
drs, group 3	gal.	.14	.17	.15	.17	.15 .16

PETROLEUM SOLVENTS AND DILUENTS

Cleaners naphthas, group 3, tks, wks	gal.	...	.07⅜	.06⅞	.07⅞	.07⅜	.07½
Bayonne, tks, wks	gal.	...	.10	.09½	.10	.09	.09½
Hydrogenated, naphthas, frt allowed East, tks	gal.	...	.16	...	.16	.15	.16
No. 2, tks	gal.	...	.18	...	.18	...	.18
No. 3, tks	gal.	...	.16	...	.16	...	.15
No. 4, tks	gal.	...	.18	...	.18	...	.18
Lacquer diluents, tks							
Bayonne	gal.	.12	.12½	.12	.12½	.12	.12½
Group 3, tks	gal.	...	.08⅜	.07⅞	.08⅞	.07⅞	.08½
Naphtha, V.M.P., East, tks, wks	gal.	...	.11	.10	.11	.09	.10
Group 3, tks, wks	gal.	...	.07⅜	.06⅞	.07⅞	.07⅜	.07½
Petroleum thinner, East, tks, wks	gal.	...	.09½	.09	.10	.09	.09½
Group 3, tks, wks	gal.	...	.06⅜	.05⅞	.06⅞	.06⅜	.06⅝
Rubber Solvents, stand grd, East, tks, wks	gal.	...	.10	.09½	.10	.09	.09½
Group 3, tks, wks	gal.	...	.07⅜	.06⅞	.07⅞	.07⅜	.07½
Stoddard Solvent, East, tks, wks	gal.	...	.10	.09½	.10	.09	.09½
Group 3, tks, wks	gal.	...	.06⅞	.06⅜	.07⅜	.06⅞	.07
Phenol, 250-100 lb drs	lb.	.14½	.15½	.13¼	.15½	.13¼	.15
tks, wks	lb.	...	.13½	.12¾	.13½	...	...
Phenyl-Alpha-Naphthylamine, 100 lb kgs	lb.	...	1.35	...	1.35	...	1.35
Phenyl Chloride, drs	lb.	...	.17	.16	.17	...	.16
Phenylhydrazine Hydrochloride, com	lb.	2.30	6.50	2.30	6.50	2.90	3.00
Phloroglucinol, tech, tins	lb.	15.00	16.50	15.00	16.50	15.00	16.50
CP, tins	lb.	20.00	22.00	20.00	22.00	20.00	22.00

Current

Phosphate Rock
Rosin Oil

	Current Market	1937 Low	1937 High	1936 Low	1936 High
Phosphate Rock, f.o.b. mines					
Florida Pebble, 68% basis ton	...	1.85	...	1.85	...	1.85
70% basis ton	...	2.35	...	2.35	...	2.35
72% basis ton	...	2.85	...	2.85	...	2.85
75-74% basis ton	...	3.85	...	3.85	...	3.85
75% basis ton	...	5.50	...	5.50	...	4.35
Tennessee, 72% basis ton	...	4.50	...	4.50	...	4.50
Phosphorus Oxychloride 175 lb cyl lb.	.16	.20	.16	.20	.16	.20
Red, 110 lb cases lb.	.40	.44	.40	.44	.40	.45
Sesquisulfide, 100 lb cs. lb.	.38	.44	.38	.44	.38	.44
Trichloride, cyl lb.	.15	.18	.15	.20	.16	.20
Yellow, 110 lb cs, wks lb.	.24	.30	.24	.33	.28	.33
Phthalic Anhydride, 100 lb drs, wks lb.	...	.14½	.14½	.15½	.14½	.15½
Pine Oil, 55 gal drs or bbls						
Destructive dist lb.	.52	.55	.49	.65	.44	.50
Steam dist wat wh bbls gal.	...	.69	.64	.79	.64	.65
tks gal.	...	.64	.59	.74	...	.59
Pitch Hardwood, wks ton	18.25	18.75	15.00	18.75	...	15.00
Coaltar, bbls, wks ton	...	19.00	...	19.00	...	19.00
Burgundy, dom, bbls, wks lb.	.05½	.06½	.03½	.06½	...	.03½
Imported lb.	.15	.16	.11	.16	.11	.13
Petroleum, see Asphaltum in Gums' Section.						
Pine, bbls bbl.	6.00	6.50	6.00	6.50	4.00	5.25
Stearin, drs lb.	.03	.04½	.03	.04½	.03	.04½
Platinum, ref'd oz.	...	40.00	40.00	68.00	34.50	64.00
POTASH						
Potash, Caustic, wks, sol. lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
flake lb.	.07	.07½	.07	.07½	.07	.07½
Liquid, tks lb.	...	.02⅞	...	.02⅞	...	.02⅞
Manure Salts, imported 30% basis, blk unit	...	.58½	.55	.58½	...	...
Potassium Abietate, bbls lb.	...	.13	...	...	...	...
Acetate lb.	.26	.28	.26	.28	.26	.28
Bicarbonate, USP, 320 lb bbls lb.	.09	.18	.09	.18	.09	.18
Bichromate Crystals, 725 lb cks* lb.	.08¾	.09¼	.08¾	.09	.08½	.09
Binoxalate, 300 lb bbls. lb.	...	.23	...	.23	...	.23
Bisulfate, 100 lb kgs lb.	.15½	.18	.15½	.18	.15½	.18
Carbonate, 80-85% calc 800 lb cks lb.	.06½	.07	.06½	.07	.06½	.07½
liquid, tks lb.	...	.02⅞	.02¾	.02⅞	.02¾	.02⅞
drs, wks lb.	.02⅞	.03½	.02⅞	.03½	.02⅞	.03¼
Chlorate crys, 112 lb kgs, wks lb.	.09¼	.09½	.09¼	.09½	.09¼	.09½
gran, kgs lb.	.12	.13	.12	.13	.12	.13
powd, kgs lb.	.08½	.08¾	.08½	.08¾	.08	.08¼
Chloride, crys, bbls lb.	.04	.04¼	.04	.04¼	.04	.04¼
Chromate, kgs lb.	.28	.29	.28	.29	.23	.28
Cyanide, 110 lb cases lb.	.55	.57½	.55	.57½	.55	.57½
Iodide, 75 lb bbls lb.	.93	1.00	.93	1.15	1.10	1.25
Metabisulfite, 300 lb bbls lb.	.11	.12	.11	.15	.13¾	.15
Muriate, bgs, dom, blk unit	...	.53½	.50	.53½	.45	.50
Oxalate, bbls lb.	.25	.26	.25	.26	.25	.26
Perchlorate, kgs, wks lb.	.09	.11	.09	.11	.09	.11
Permanganate, USP, crys, 500 & 1000 lb drs, wks lb.	.18½	.19½	.18½	.19½	.18½	.19½
Prussiate, red, bbls lb.	.35	.37	.35	.37	.35	.38½
Yellow, bbls lb.	.15	.16	.15	.18	.16	.19
Sulfate, 90% basis, bgs ton	...	36.25	...	36.25	33.75	36.25
Titanium Oxalate, 200 lb bbls lb.	.33	.35	.33	.35	.32	.35
Pot & Mag Sulfate, 48% basis bgs ton	...	25.75	24.75	25.75	22.25	24.75
Propane, group 3, tks lb.	.03	.04½	.03	.04½	.03	.04½
Putty, coml, tubs 100 lb.	...	2.90	2.90	3.00	2.75	3.00
Linseed Oil, kgs 100 lb.	...	4.65	4.65	4.75	4.50	4.75
Pyrethrum, conc liq:						
2.4% pyretherins, drs, frt allowed gal.	5.00	5.25	4.15	5.25	...	...
3.6% pyretherins, drs, frt allowed gal.	7.75	7.85	6.10	7.85	...	...
Flowers, coarse, Japan, bgs lb.	...	.18	.12¾	.18	...	...
Fine powd, bbls lb.	...	.19	.14	.19	...	...
Pyridine, denat, 50 gal drs gal.	...	1.55	1.30	1.55	...	1.30
Pyrites, Spanish cif Atlantic ports, blk unit	.12	.13	.12	.13	.12	.13
Pyrocatechin, CP, drs, tins lb.	2.15	2.75	2.15	2.75	2.15	2.75
Quebracho, 35% liq tks lb.	...	.03	.02⅞	.03	.02½	.02⅞
450 lb bbls, c-l lb.	...	.03½	.03½	.03⅞	.03⅜	.03⅞
Solid, 63%, 100 lb bales cif lb.	...	.04	.03⅞	.04	.03¾	.03⅞
Clarified, 64%, bales lb.	...	.04¼	.04¼	.04⅜	.03⅞	.04⅜
Quercitron, 51 deg liq, 450 lb bbls lb.	.06	.06½	.06	.06½	.06	.06½
Solid, drs lb.	.10	.12	.10	.12	.10	.12
R SALT						
R Salt, 250 lb bbls, wks lb.	.52	.55	.52	.55	.52	.57
Resorcinol tech, cans lb.	.75	.80	.75	.80	.75	.80
Rochelle Salt, cryst lb.	.15	.15½	.14½	.15½	.14	.15
Powd, bbls lb.	.16	.16½	.13½	.16½	.13	.14
Rosin Oil, bbls, first run gal.	.54	.56	.54	.73	.38	.71
Second run gal.	.56	.58	.56	.75	.43	.73
Third run, drs gal.	.60	.62	.60	.79	.49	.77

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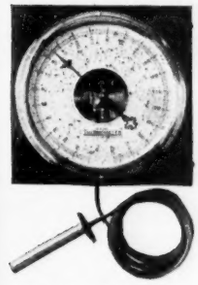

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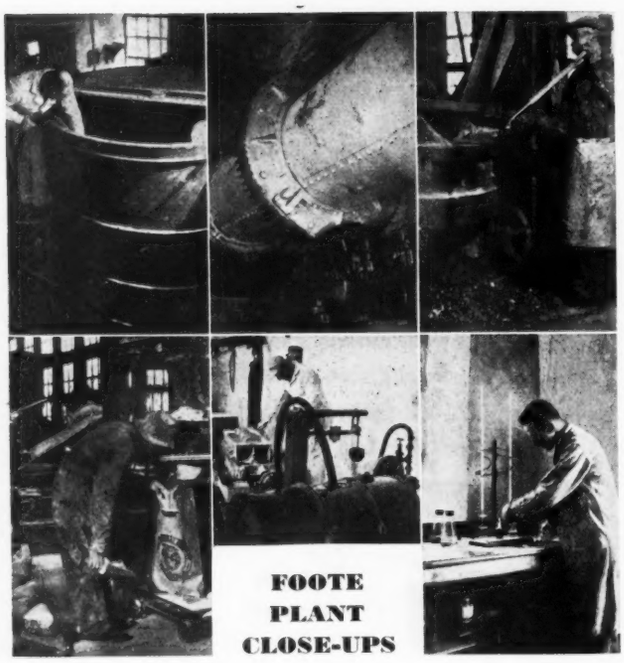

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Rosins
Sodium Nitrate

Prices

		Current Market	1937 Low	1937 High	1936 Low	1936 High
Rosins 600 lb bbls, 280 lb unit ex. yard NY:†						
B	...	6.40	6.40	10.00	4.45	10.95
D	...	6.40	6.40	10.35	4.95	10.95
E	...	6.40	6.40	10.25	5.15	10.95
F	...	6.90	6.90	10.80	5.40	10.95
G	...	6.90	6.90	10.85	5.50	10.95
H	...	6.90	6.90	10.85	5.60	10.95
I	...	6.95	6.95	10.90	5.70	10.95
K	...	6.95	6.95	10.90	5.55	10.95
M	...	7.05	7.05	11.00	5.60	10.95
N	...	7.10	7.10	11.05	5.70	11.00
WG	...	7.65	7.65	11.75	5.85	11.00
WW	...	8.00	8.00	13.75	5.90	12.05
Rosins, Gum, Savannah (280 lb unit):†						
B	...	5.15	5.15	8.75	3.15	9.70
D	...	5.15	5.15	9.00	3.75	9.70
E	...	5.15	5.15	9.10	3.90	9.70
F	...	5.65	5.65	9.55	4.10	9.70
G	...	5.65	5.65	9.60	4.20	9.70
H	...	5.70	5.70	9.60	4.30	9.70
I	...	5.70	5.70	9.65	4.35	9.70
K	...	5.70	5.70	9.65	4.30	9.70
M	...	5.80	5.80	9.75	4.35	9.70
N	...	5.85	5.85	9.75	4.45	9.75
WG	...	6.40	6.40	10.50	4.45	9.75
WW	...	6.75	6.75	12.50	4.55	10.80
X	...	6.75	6.75	12.50	4.55	10.80
Rosin, Wood, c-l, FF grade, NY	6.70	7.65	6.70	10.72	6.10	10.52
Rotten Stone, bgs mines..ton	...	35.00	...	35.00	...	35.00
Imported, lump, bbls ...lb.	...	.12	...	...	...	...
Powdered, bbls .....lb.	.08½	.10	...	...	...	...
SAGO FLOUR						
Sago Flour, 150 lb bgs ...lb.	.03¼	.03¾	.02¾	.03¾	.02¾	.03¾
Sal Soda, bbls, wks ...100 lb.	...	1.20	1.15	1.20	1.15	1.30
Salt Cake, 94-96%, c-l, wks ton	19.00	23.00	19.00	23.00	19.00	23.00
Chrome, c-l, wks .....ton	11.00	12.00	11.00	12.00	11.00	13.00
Saltpetre, gran, 450-500 lb bbls .....lb.	.06	.064	.06	.064	.059	.06¼
Cryst, bbls .....lb.	.07	.074	.07	.074	.069	.08
Powd, bbls .....lb.	.07	.074	.07	.074	.069	.07½
Satin, White, pulp, 550 lb bbls .....lb.	.01¼	.01½	.01¼	.01½	.01¼	.01½
Schaeffer's Salt, kgs .....lb.	.46	.48	.46	.48	.46	.50
Shellac, Bone dry, bbls..lb. r	.17	.17½	.17	.22	.17½	.26½
Garnet, bgs .....lb.	.14	.15	.14	.17	.16	.20
Superfine, bgs .....lb. s	.13	.13½	.13	.18½	.14½	.18½
T. N., bgs .....lb. s	.12	.12½	.12	.14½	.13½	.16
Silver Nitrate, vials .....oz.	.32⅝	.34⅞	.32⅝	.35½	.32⅛	.34⅞
Slate Flour, bgs, wks ....ton	9.00	10.00	9.00	10.00	9.00	10.00
Soda Ash, 58% dense, bgs, c-l, wks .....100 lb.	...	1.10	...	1.10	...	1.25
58% light, bgs .....100 lb.	...	1.08	...	1.08	...	1.23
blk .....100 lb.	...	.90	...	.90	...	1.05
paper bgs .....100 lb.	...	1.05	...	1.05	...	1.20
bbls .....100 lb.	...	1.35	...	1.35	...	1.50
Caustic, 76% grnd & flake, drs .....100 lb.	...	3.00	...	3.00	...	3.00
76% solid, drs .....100 lb.	...	2.60	...	2.60	...	2.60
Liquid sellers, tks ..100 lb.	...	2.25	...	2.25	...	2.25
Sodium Abietate, drs .....lb.	...	.13	.08	.13	...	.08
Acetate, tech, 450 lb bbls, wks .....lb.	.04¼	.05	.04¼	.05	.04½	.05
Alignate, drs .....lb.	...	.69	.64	.69	...	.64
Antimoniate, bbls .....lb.	.14¼	.15¼	.13¾	.16¼	.12	.14
Arsenate, drs .....lb.	.08	.08½	.08	.11½	...	.10½
Arsenite, liq, drs .....gal.	.30	.33	.33	.40	.40	.75
Dry, gray, drs, wks ..lb.	.07½	.09½	...	...	...	...
Benzoate, USP, kgs ....lb.	.46	.48	.46	.48	.46	.48
Bicarb, 400 lb bbl, wks 100 lb.	...	1.85	1.75	1.85	1.75	1.85
Bichromate, 500 lb cks, wks* .....lb.	.06¾	.07¼	.06½	.07¼	.06½	.07
Bisulfite, 500 lb bbl, wks lb.	.03¼	.036	.03¼	.036	.03¾	.036
35-40% sol bbls, wks 100 lb.	1.40	1.80	...	...	...	...
Chlorate, bgs, wks .....lb.	.06¼	.07½	.06¼	.07½	.06¾	.07½
Cyanide, 96-98%, 100 & White, drs .....lb.	.09	.13	...	...	...	...
250 lb drs, wks .....lb.	.16½	.17½	.15½	.17½	.15½	.17½
Fluoride, 90%, 300 lb bbls, wks .....lb.	.07½	.08¼	.07½	.08¼	.07¼	.08¼
Hydrosulfite, 200 lb bbls, f.o.b. wks .....lb.	.16	.17	.16	.17	.17	.19
Hyposulfite, tech, pea crys 375 lb bbls, wks 100 lb.	2.50	3.00	2.50	3.00	2.50	3.00
Tech, reg cryst, 375 lb bbls, wks .....100 lb.	2.40	2.75	2.40	2.75	2.40	2.75
Iodide .....lb.	1.90	1.95	1.90	1.95	1.90	2.05
Metal, drs, 280 lbs .....lb.	...	.19	...	.19	...	...
Metanilate, 150 lb bbls..lb.	.41	.42	.41	.42	.41	.42
Metasilicate, gran, c-l, wks .....100 lb.	...	2.15	...	2.15	2.15	3.00
cryst, bbls, c-l, wks 100 lb.	...	2.75	...	2.75	2.75	3.25
Monohydrate, bbls .....lb.	...	.023	...	.023	...	.023
Naphthenate, drs .....lb.	.12	.19	.09	.19	...	.09
Naphthionate, 300 lb bbl lb.	.52	.54	.52	.54	.52	.54
Nitrate, 92%, crude, 200 lb bgs, c-l, NY .....ton	...	28.30	26.80	28.30	24.80	26.80
100 lb bgs .....ton	...	29.00	27.50	29.00	25.50	27.50
Bulk .....ton	...	27.00	25.50	27.00	23.50	25.50

r Bone dry prices at Chicago 1c higher; Boston ½c; Pacific Coast 2c; Philadelphia deliveries f.o.b. N. Y.; refined 6c higher in each case; s T. N. and Superfine prices quoted f.o.b. N. Y. and Boston; Chicago prices 1c higher; Pacific Coast 3c; Philadelphia f.o.b. N. Y. * Spot price is ⅛c higher; † Closing prices Nov. 26th.

		Current Market		1937 Low	1937 High	1936 Low	1936 High
Sodium (continued):							
Nitrite, 500 lb bbls	lb.	.07	.10	.07	.10	.07	.08
Orthochlorotoluene, sulfonate, 175 lb bbls, wks	lb.	.25	.27	.25	.27	.25	.27
Perborate, drs, 400 lbs	lb.	.14¾	.15¼	.14¾	.15¼	.14¾	.18
Peroxide, bbls, 400 lb	lb.	...	.17	...	.17	...	.17
Phosphate, di-sodium, tech, 310 lb bbls, wks	100 lb.	...	1.90	...	1.90	1.95	2.30
bgs, wks	100 lb.	...	1.70	...	1.70	1.75	2.10
Tri-sodium, tech, 325 lb bbls, wks	100 lb.	...	2.05	...	2.05	1.95	2.30
bgs, wks	100 lb.	...	1.85	...	1.85	1.75	2.10
Picramate, 160 lb kgs	lb.	.65	.67	.65	.67	.65	.69
Prussiate, Yellow, 350 lb bbl, wks	lb.	.10	.11½	.10	.11½	.10	.12
Pyrophosphate, anhyd, 100 lb bbls	lb.	...	.10	...	.10	.10	.132
Sesquisilicate, drs, c-l, wks	100 lbs.	...	3.00	...	...	...	...
Silicate, 60°, 55 gal drs, wks	100 lb.	1.65	1.70	1.65	1.70	1.65	1.70
40°, 35 gal drs, wks	100 lb.	...	.80	...	.80	...	.80
tks, wks	100 lb.	...	.65	...	.65	...	.65
Silicofluoride, 450 lb bbls NY	lb.	.05¾	.06½	.05¾	.07	.05¼	.07¼
Stannate, 100 lb drs	lb.	.28½	.31½	.28½	.44	.28½	.37½
Stearate, bbls	lb.	...	.24	.19	.24	.20	.26
Sulfanilate, 400 lb bbls	lb.	.16	.18	.16	.18	.16	.18
Sulfate Anhyd, 550 lb bgs* c-l, wks	100 lb. ‡	1.45	1.90	1.45	1.90	1.30	1.90
Sulfide, 80% cryst, 440 lb bbls, wks	lb.	...	.02¼	...	.02¼	...	.02¼
62% solid, 650 lb drs, c-l, wks	lb.	...	.02	...	.02	...	.03
Sulfite, cryst, 400 lb bbls, wks	lb.	.023	.02½	.023	.02½	.023	.02½
Sulfocyanide, drs	lb.	.28	.47	.28	.47	.28	.47
Sulforicinoleate, bbls	lb.	...	.12	...	.12	...	...
Tungstate, tech, crys, kgs	lb.	...	nom.	.85	.90	.85	.90
Sorbitol, com., drs, basis content, wks	lb.	...	.25	...	.25	...	...
Spruce Extract, ord, tks	lb.	...	.01½	.01	.01½	...	.01
Ordinary, bbls	lb.	...	.01⅝	.01½	.01⅝	...	.01½
Super spruce ext, tks	lb.	...	.01¾	.01⅜	.01⅝	...	.01⅝
Super spruce ext, bbls	lb.	...	.01⅞	...	.01⅞	...	.01⅞
Super spruce ext, powd, bgs	lb.	...	.04	.04	.04¼	...	.04
Starch, Pearl, 140 lb bgs	100 lb.	3.08	3.28	3.08	4.53	2.99	4.30
Powd, 140 lb bgs	100 lb.	3.18	3.38	3.18	4.63	3.90	4.54
Potato, 200 lb bgs	lb.	...	.05½	.04½	.05½	.04½	.05½
Imp, bgs	lb.	.05½	.06	.05	.06	.05	.06
Rice, 200 lb bbls	lb.	...	.07¼	...	.07¼	...	.07¼
Wheat, thick, bgs	lb.	.07	.08½	.07	.08½	.08¼	.08½
Strontium carbonate, 600 lb bbls, wks	lb.	.07¼	.07½	.07¼	.07½	.07¼	.07½
Nitrate, 600 lb bbls, NY	lb.	.07¾	.08¼	.07¾	.08¼	.08¾	.09½
Sucrose octa-acetate, den, grd, bbls, wks	lb.	.45	...	.45	...	.45	...
tech, bbls, wks	lb.	.40	...	.40	...	.40	...
Sulfur, crude, f.o.b. mines	ton	18.00	19.00	18.00	19.00	18.00	19.00
Flour, coml, bgs	100 lb.	1.65	2.35	1.65	2.35	1.60	2.35
bbls	100 lb.	1.95	2.70	1.95	2.70	1.95	2.70
Rubbermakers, bgs	100 lb.	2.20	2.80	2.20	2.80	2.20	2.80
bbls	100 lb.	2.55	3.15	2.55	3.15	2.55	3.15
Extra fine, bgs	100 lb.	2.85	3.00	2.85	3.00	2.40	3.00
Superfine, bgs	100 lb.	2.65	2.80	2.65	2.80	2.20	2.80
bbls	100 lb.	2.25	3.10	2.25	3.10	2.25	3.10
Flowers, bgs	100 lb.	3.00	3.75	3.00	3.75	3.00	3.75
bbls	100 lb.	3.35	4.10	3.35	4.10	3.35	4.10
Roll, bgs	100 lb.	2.35	3.10	2.35	3.10	2.35	3.10
bbls	100 lb.	2.50	3.25	2.50	3.25	2.50	3.25
Sulfur Chloride, 700 lb drs, wks	lb.	.03	.04	.02½	.04	...	...
Sulfur Dioxide, 150 lb cyl	lb.	.07	.09	.07	.09	.06½	.08½
Multiple units, wks	lb.	.04½	.07	.04½	.07	.05½	.06
tks, wks	lb.	.04	.05	.04	.05	.04½	.04¼
Refrigeration, cyl, wks	lb.	.16	.17	.15	.17	.10	.13
Multiple units, wks	lb.	.07½	.10	.07½	.10	.07	.09¼
Sulfuryl Chloride	lb.	.15	.40	.15	.40	.15	.40
Sumac, Italian, grd	ton	...	61.00	58.50	65.00	52.00	60.00
Extract, 42°, bbls	lb.	.05¼	.06¼	.05¼	.06¼	...	...
Superphosphate, 16% bulk, wks	ton	...	9.00	8.25	9.00	...	...
Run of pile	ton	...	8.50	8.00	8.50	...	...
Triple, 44-45%, a. p. a. bulk, wks, Balt, unit	ton	...	.85	.70	.85	...	...
Talc, Crude, 100 lb bgs, NY	ton	13.00	15.00	13.00	15.00	13.00	15.00
Ref'd, 100 lb bgs, NY	ton	14.00	16.00	14.00	16.00	14.00	18.00
French, 220 lb bgs, NY	ton	23.00	30.00	23.00	30.00	22.00	30.00
Ref'd, white, bgs, NY	ton	45.00	60.00	45.00	60.00	45.00	60.00
Italian, 220 lb bgs to arr	ton	60.00	62.00	60.00	62.00	60.00	75.00
Ref'd, white, bgs, NY	ton	65.00	70.00	65.00	70.00	65.00	80.00
Tankage Grd, NY	unit u	...	3.00	3.00	4.40	2.65	4.25
Ungrd	unit u	...	2.80	2.80	4.35	2.40	4.25
Fert grade, f.o.b. Chgo	unit u	...	2.75	2.75	4.00	2.40	4.00
South American cif	unit u	...	3.35	3.15	4.25	2.70	3.90
Tapioca Flour, high grade, bgs	lb.	.03¼	.05½	.03¼	.05½	.03½	.05½
Tar Acid Oil, 15%, drs	gal.	.22½	.25½	.21	.25½	.21	.24
25%, drs	gal.	.26½	.29½	.24½	.29½	.24	.27½
Tar, pine, delv, drs	gal.	...	.26	...	.26	.25	.26
tks, delv, E. cities	gal.	...	.20	...	.20	...	.20
Tartar Emetic, tech, bbls	lb.	.26¾	.27	.24¾	.27	.24¾	.25
USP, bbls	lb.	.32	.32½	.30	.32½	.28	.30½
Terpineol, den grd, drs	lb.	.13¾	.14¾	.13¾	.14¾	.13¾	.14¾
tks	lb.	.13	.14	.13	.14	.13	.14

‡ Bags 15c lower; u + 10; * Bbls. are 20c higher.

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Prices

	Current Market	1937 Low	1937 High	1936 Low	1936 High
Tetrachlorethane, 650 lb drs lb.	.08	.08½	.08	.08½	.08	.08½
Tetrachloroethylene, drs, tech lb.	...	.10½	...	.10½	...	...
Tetralene, 50 gal drs, wks lb.	.12	.13	.12	.13	.12	.13
Thiocarbanilid, 170 lb bbl. lb.	.20	.25	.20	.25	.20	.25
Tin, crystals, 500 lb bbls, wks lb.	.34	.34½	.34	.46	.35	.39½
Metal, NY lb.	...	.41¾	.41¾	.66	.40½	.52½
Oxide, 300 lb bbls, wks lb.	.50	.52	.50	.62	.47	.57
Tetrachloride, 100 lb drs, wks lb.	...	.21¼	.21¼	.32	.21¼	.26¾
Titanium Dioxide, 300 lb bbls lb.	.16¼	.17	.16¼	.17	.16¼	.19¼
Barium Pigment, bbls lb.	.06⅛	.06⅜	.06	.06⅜	.05¾	.06½
Calcium Pigment, bbls lb.	.06⅛	.06⅜	.06	.06⅜	.05¾	.06½
Toluidine, mixed, 900 lb drs, wks lb.	.26	.27	.26	.27	.27	.28
Toluol, 110 gal drs, wks gal.	...	.35	...	.35	...	.35
8000 gal tks, frt allowed gal.	...	.30	...	.30	...	.30
Toner Lithol, red, bbls lb.	.75	.80	.75	.80	.75	.80
Para, red, bbls lb.	...	.75	...	.75	...	.75
Toluidine, bgs lb.	...	1.35	...	1.35	...	1.35
Triacetin, 50 gal drs, wks lb.	...	.36	...	.36	.32	.36
Triamyl Borate, lcl, drs, wks lb.	...	.27	...	.27	...	
Triamylamine, c-l, drs, wks lb.	.77	1.25	.77	1.25	...	1.25
Tributylamine, lcl, drs, wks lb.	...	.70	...	...	...	...
Tributyl citrate, drs, frt all'd lb.	...	.45	...	.45	...	..
Tributyl Phosphate, frt all'd lb.	...	.50	...	.50	...	..
Trichlorethylene, 600 lb drs, frt allowed E. Rocky Mts lb.	.089	.094	.089	.094	.089	.094
Tricresyl phosphate, tech, drs lb.	...	.26½	.22½	.26½	.19	.26
Triethanolamine, 50 gal drs wks lb.	.21	.22	.21	.30	.26	.30
tks, wks lb.	...	.20	.20	.25	...	.25
Triethylene glycol, drs, wks lb.	...	.26	...	...	...	.
Trihydroxyethylamine Oleate, bbls lb.	...	.30	...	...	...	...
Stearate, bbls lb.	...	.30	...	...	...	...
Trimethylamine, c-l, drs, frt allowed E. Mississippi lb.	...	1.00	...	1.00	...	
Triphenylguanidine lb.	.58	.60	.58	.60	.58	.60
Triphenyl Phosphate, drs lb.	.34	.36	...	...	...	
Tripoli, airfloated, bgs, wks ton	26.00	30.00	25.00	30.00	27.50	30.00
Turpentine (Spirits), c-l, NY dock, bbls gal.	...	.32½	.32	.47	.40½	.50
Savannah, bbls gal.	...	.27	.25	.42	.35½	.45
Jacksonville, bbls gal.	...	.27	.25	.41	.35¼	.44½
Wood Steam dist, bbls, c-l, NY gal.	...	.30	.30	.44	.38	.47
Wood, dest dist, c-l, drs gal.	...	.36	...	...	...	...
Urea, pure, 112 lb cases lb.	.14½	.15½	.14½	.15½	.14½	.17
Fert grade, bgs, c.i.f. ton						
c.i.f. S.A. points ton	95.00	110.00	95.00	110.00	95.00	110.00
Dom, f.o.b., wks ton	95.00	101.00	95.00	101.00	95.00	110.00
Urea Ammonia liq 55% NH_3, tks unit	...	1.04	1.00	1.04	...	.96
Valonia beard, 42%, tannin bgs ton	...	52.00	35.00	52.00	46.00	64.50
Cups, 32% tannin, bgs ton	...	35.00	31.50	36.00	34.00	42.00
Vanilin, ex eugenol, 25 lb tins, 2000 lb lots lb.	...	3.10	3.10	3.65	3.65	3.75
Ex-guaiacol lb.	...	3.00	3.00	3.55	3.55	3.65
Vermilion, English, kgs lb.	1.60	1.69	1.60	1.90	1.52	1.85
Wattle Bark, bgs ton	41.75	43.75	31.00	43.75	26.50	32.00
Extract, 60°, tks, bbls lb.	...	.04⅝	.03⅝	.04⅝	...	.03⅝
WAXES						
Wax, Bayberry, bgs lb.	.16⅞	.17	.16½	.17½	.16½	.20
Bees, bleached, white 500 lb slabs, cases lb.	.39	.45	.38	.45	.34	.40
Yellow, African, bgs lb.	.25½	.26	.25½	.30	.24	.27
Brazilian, bgs lb.	.29½	.30	.29½	.34	.25	.29½
Chilean, bgs lb.	.29½	.30	.29½	.34	.25	.29½
Refined, 500 lb slabs, cases lb.	.35	.39	.29½	.39	.28	.32
Candelilla, bgs lb.	.14	.15	.13	.16½	.14	.17½
Carnauba, No. 1, yellow, bgs lb.	.44	.45½	.44	.49	.43½	.48
No. 2, yellow, bgs lb.	.43	.43½	.43	.46½	.42	.46
No. 2, N. C., bgs lb.	.39	.40	.38	.43	.38	.40
No. 3, Chalky, bgs lb.	.34½	.36	.34½	.40	.33½	.38
No. 3, N. C., bgs lb.	.35½	.36	.35	.43	.34	.41
Ceresin, dom, bgs lb.	.08½	.12	.08	.12	.08	.11
Japan, 224 lb cases lb.	.10¾	.11	.09½	.11¼	.08	.10½
Montan, crude, bgs lb.	.11	.12	.11	.12	.10¾	.11¾
Paraffin, see Paraffin Wax.						
Spermaceti, blocks, cases lb.	.23	.24	.23	.24	.22	.24
Cakes, cases lb.	.24	.25	.24	.25	.23	.25
Whiting, chalk, com, 200 lb bgs c-l, wks ton	12.00	14.00	12.00	14.00	...	15.00
Gilders, bgs, c-l, wks ton	...	15.00	...	15.00	11.50	15.00
Wood Flour, c-l, bgs ton	20.00	30.00	18.00	30.00	18.00	30.00
Xylol, frt allowed, East 10° tks, wks gal.	...	.33	...	.33	...	.33
Coml, tks, wks, frt all'd gal.	...	.30	...	.30	...	.30
Xylidine, mixed crude, drs lb.	.35	.36	.35	.36	.36	.37
Zinc, Carbonate tech, bbls, NY lb.	.14	.15	.12	.15	.09	.11
Chloride fused, 600 lb drs, wks lb.	.04½	.046	.04½	.046	.04½	.05¾
Gran, 500 lb drs, wks lb.	.05	.05¾	.05	.05¾	.05	.05¾
Soln 50%, tks, wks 100 lb.	...	2.25	2.00	2.25	...	2.00
Cyanide, 100 lb drs lb.	.36	.38	.36	.38	.36	.38
Zinc dust, 500 lb bbls, c-l, delv lb.	...	.0765	.0765	.094	.068	.0755
Metal, high grade slabs, c-l, NY 100 lb.	...	5.60	5.60	7.85	...	5.825
E. St. Louis 100 lb.	...	5.25	5.25	7.50	4.80	5.45
Oxide, Amer, bgs, wks lb.	.06¼	.07¾	.05¼	.07¾	.05	.05½
French, 300 lb bbls, wks lb.	.06¼	.07¾	.05½	.07¾	.05½	.07
Palmitate, bbls lb.	.23	.25	.23	.25	.22	.23
Resinate, fused, pale, bbls lb.	.	.10	.09	.10	.05¾	.10
Stearate, 50 lb bbls lb.	.20	.23	.20	.23	.19	.23

		Current Market		1937 Low	1937 High	1936 Low	1936 High
Zinc Sulfate, crys, 400 lb bbl, wks	lb.	...	.033	.028	.033	.028	.033
Flake, bbls	lb.	.	.0375	.032	.0375	.032	.035
Sulfide, 500 lb bbls, delv	lb.	.09¼	.09¾	.09¼	.09¾	.09¼	.11¼
bgs, delv	lb.	.09	.09½	.09	.09½	.09	.11½
Sulfocarbolate, 100 lb kgs	lb.	.24	.26	.24	.26	.24	.25
Zirconium Oxide, crude, 73-75% grd, bbls, wks	ton	75.00	100.00	...	...	...	...
kgs, wks	lb.	.04¼	.04½	...	...	...	...

Oils and Fats

Babassu, tks, futures	lb.	.07¼	.07½	.07¼	.11¼	...	...
Castor, No. 3, 400 lb bbls	lb.	.10¼	.10¾	.10¼	.10¾	.10¼	.10¾
Blown, 400 lb bbls	lb.	.12¼	.13	.12¼	.13	.12¼	.13
China Wood, drs, spot NY	lb.	.14½	nom.	.12½	.23	.13	.19¼
Tks, spot NY	lb.	.14½	nom.	.118	.23	.125	.19
Coast, tks	lb.	...	nom.	.133	.23	.127	.18
Coconut, edible, bbls NY	lb.	...	.09½	.09½	.15	.09¼	.14¼
Manila, tks, NY	lb.	...	.04	.04	.09½	.04⅛	.07
Tks, Pacific Coast	lb.	...	.03⅞	.03⅞	.08⅛	.03⅞	.08½
Cod, Newfoundland, 50 gal bbls	gal.	.52	nom.	.51	.52	.40	.48½
Copra, bgs, NY	lb.	...	.0235	.0235	.055	.0320	.0535
Corn, crude, tks, mills	lb.	.	.06½	.06½	.10¾	.08	.10½
Refd, 375 lb bbls, NY	lb.	.09½	.10	.09½	.13¼	.10¼	.13
Degras, American, 50 gal bbls. NY	lb.	.08	.08¼	.07¾	.08¼	.05¼	.08
English, bbls, NY	lb.	.08	.08¼	.07¾	.08¼	.04	.08
Greases, Yellow	lb.	.04⅞	.05	.04⅞	.09	.03⅜	.08¼
White, choice bbls, NY	lb.	.06¾	.07½	.06¾	.10¼	.04⅜	.08¾
Lard Oil, edible, prime	lb.	...	.14	.14	.16¾	.12¾	.16¼
Extra, bbls	lb.	...	.11¼	.11¼	.13½	.09½	.13
Extra, No. 1, bbls	lb.	...	.09¼	.09¼	.13½	.07¾	.12¼
Linseed, Raw less than 5 bbl lots	lb.	...	.1120	.107	.121	.104	.117
bbls, c-l, spot	lb.	...	.104	.099	.113	.096	.103
Tks	lb.	...	.098	.093	.107	.086	.097
Menhaden, tks, Baltimore	gal.	.34	nom.	.34	.45	.25	.36
Refined, alkali, drs	lb.	.08	.082	.08	.10	.066	.084
Tks	lb.	.	.074	.074	.09	.062	.078
Kettle bodied, drs	lb.	.09	.092	.09	.11	.08	.096
Light pressed, drs	lb.	.074	.076	.074	.094	.06	.078
Tks	lb.	...	.067	.067	.084	.056	.072
Neatsfoot, CT, 20°, bbls, NY	lb.	...	.17¼	.16¾	.18¼	.16	.17
Extra, bbls, NY	lb.	...	.09¾	.09¾	.13¾	.08	.12½
Pure, bbls, NY	lb.	...	.12¾	.12¾	.14¼	.11½	.12¾
Oiticica, bbls	lb.	.14	nom.	.10⅞	.17	.10	.15½
Oleo, No. 1, bbls, NY	lb.	...	.12½	.12⅜	.14½	.09¼	.14
No. 2, bbls, NY	lb.	...	.12	.11⅞	.14	.08¾	.13½
Olive, denat, bbls, NY	gal.	1.20	nom.	1.20	1.65	.73	1.60
Edible, bbls, NY	gal.	2.35	nom.	2.20	2.50	1.60	2.25
Foots, bbls, NY	lb.	.09¾	.10	.09¾	.12½	.08	.10⅜
Palm, Kernel, bulk	lb.	...	.04½	.04½	.08⅛	.04¾	.083
Niger, cks	lb.	...	.04	.04	.07¼	.04	.06½
Sumatra, tks	lb.	...	.0375	.0375	.06½	.03¾	.06½
Peanut, crude, bbls, NY	lb.	.07	nom.	.06¼	.10⅝	.08	.10½
Tks, f.o.b. mill	lb.	.06⅞	nom.	.06½	.10¼	.17¾	.10⅜
Refined, bbls, NY	lb.	.10¼	nom.	.10¼	.13½	.12	.13¼
Perilla, drs, NY	lb.	.12	.12¼	.11	.13½	.07	.11¾
Tks, Coast	lb.	...	.11½	.105	.13	.066	.11¼
Pine, see Pine Oil, Chemical Section.							
Rapeseed, blown, bbls, NY	lb.	.14½	.14¾	.13	.14¾	.086	.13½
Denatured, drs, NY	gal.	.91	.92	.85	.97	.52	.85
Red, Distilled, bbls	lb.	.09⅝	.10⅜	.09⅝	.12⅝	.08⅝	.11⅝
Tks	lb.	.08¾	.09¾	.08¾	.10¾	.07¾	.09¾
Salmon, Coast, 8000 gal tks	gal.	...	nom.		nom.	.31	.32½
Sardine, Pac Coast, tks	gal.	...	.37	.35	.55	.28	.47
Refined alkali, drs	lb.	.08	.082	.08	.10	.066	.084
Tks	lb.	.	.074	.074	.09	.062	.078
Light pressed, drs	lb.	.074	.076	.074	.094	.06	.078
Tks	lb.	...	.067	.067	.084	.056	.072
Sesame, yellow, dom	lb.	.10½	nom.	.10½	.13¼	.12¾	.14½
White, dos	lb.	.10½	nom.	.10½	.13¼	.12¾	.14½
Soy Bean, crude							
Dom, tks, f.o.b. mills	lb.	.	.07	.07	.10½	.07	.10½
Crude, drs, NY	lb.	.07½	.08	.07½	.11½	.076	.11½
Ref'd, drs, NY	lb.	.08½	.09	.08½	.12½	.081	.12½
Tks	lb.	...	.08	.08	.11½	.07½	.11½
Sperm, 38° CT, bleached, bbls NY	lb.	.10	.102	.096	.102	.094	.102
45° CT, bleached, bbls, NY	lb.	.093	.095	.089	.095	.087	.095
Stearic Acid, double pressed dist bgs	lb.	.11	.12	.11	.13½	.08½	.12½
Double pressed saponified bgs	lb.	.11¼	.12¼	.11¼	.13¾	.09	.12¾
Triple pressed dist bgs	lb.	.14	.15	.14	.16½	.11¼	.15½
Stearine, Oleo, bbls	lb.	.08½	.08¾	.08½	.11½	.07¼	.12¼
Tallow City, extra loose	lb.	...	.06¼	.06¼	.09¼	.04⅛	.08¾
Edible, tierces	lb.	...	.07	.07	.10¼	.06¾	.09½
Acidless, tks, NY	lb.	...	.09¼	.09¼	.13	.07	.11¾
Turkey Red, single, bbls	lb.	.08	.08½	.08	.08½	.08	.08½
Double, bbls	lb.	.12½	.13	.12½	.13	.12½	.13½
Whale:							
Winter bleach, bbls, NY	lb.	.098	.10	.091	.111	.072	.087
Refined, net, bbls, NY	lb.	.094	.096	.087	.107	.068	.083

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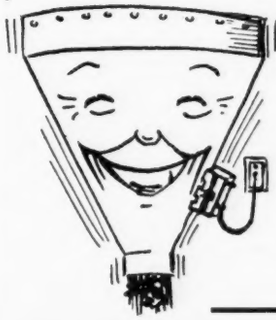

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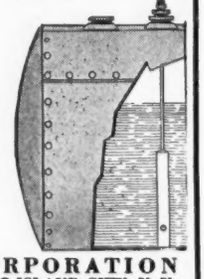

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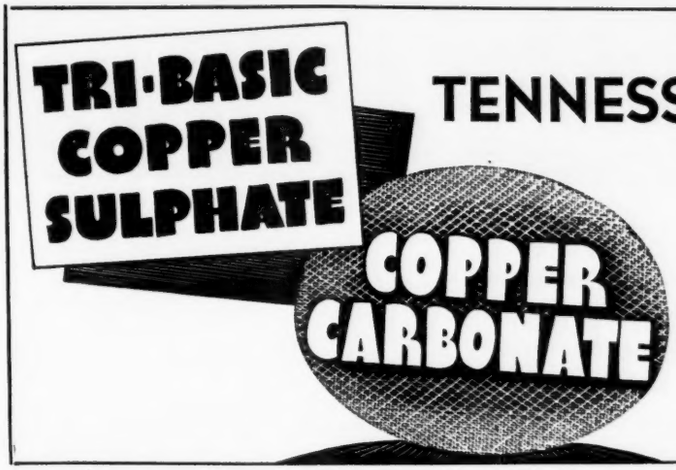

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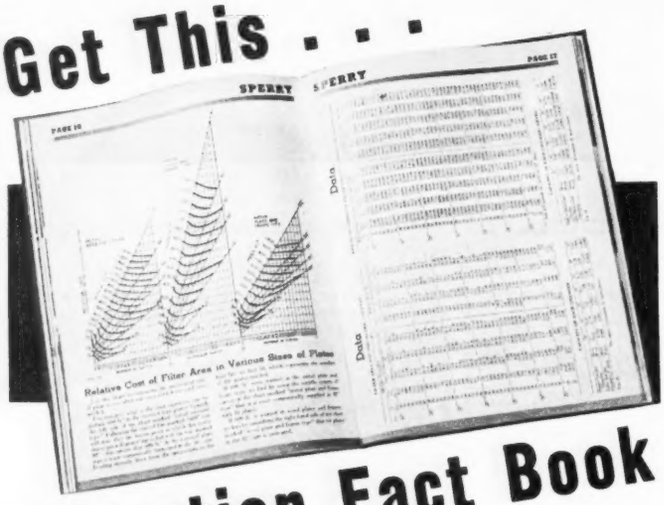

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U. S. Potash Co. 648

Victor Chemical Works .....Pages 554 and 555

Warner Chemical Co. 545
Wishnick-Tumpeer, Inc. .....Cover 4
Wolf & Co., Jacques 608

IGEPONS

THE IDEAL SCOURING, WETTING OUT, PENETRATING AND LEVELING AGENTS

GDC

GENERAL DYESTUFF CORPORATION

435 HUDSON ST., NEW YORK, N. Y.

"We"—Editorially Speaking

Merry Christmas!

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And a prosperous New Year!

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It's a good old Spanish custom any way, and at this season of the year we just refuse to be sarcastic—so those good wishes sincerely breathe the spirit of good will.

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Innis, Speiden beat the gun on holiday greeting cards with a "Happy Thanksgiving" letter in orange and brown, with turkey 'n all the fixin's.

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Did you know—

That Edgar Queeny played Prince Charming to the Queen at this season's ball of the Veiled Prophet?

That the Nell Dorr, whose three strikingly beautiful and different photographs appear in the November issue of *Coronet*, is the wife of Dr. J. V. N. Dorr?

That Phil Drackett, late of Solvay and later of Hooker, is growing potatoes in Florida?

That Ben Mechling has a steeple-chaser named "Justa Bud" which did rather better than well at several of the hunt club point-to-points this season?

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We don't want to detract from the glory of Norman Diehl's triumph, but *Fortune* coined us a nice slogan too, when they called American chemical industry "the most progressive industry alive."

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"We" are interested—naturally enough—in advertising copy, but the following (sent for a want ad in this December issue) simply knocks us for a loop:

ORANGES:—Select oranges fresh from our trees. Christmas gift box $1. Nice basket, 25 lbs. $2.20.

Our BEST, the very kind for Chemists. Field run prices lower. They are the kind you love for the Christmas Jubilee and dear sick Mother and Father. The dear Editor never asked us for any statement, but we have to say, anyhow, the good Editor's reputation in our Country to be the finest Man of the Ages, whose writings will light the Chemical World forever. Kindly order your sweet Christmas oranges early, and if you love the good Editor and all of his dear Chemical Pets, and subscribe, please include your sweet photograph and we will keep it with us. Hurrah for you!

Address:
The David Nichols Co.
Box 84 Rockmart, Georgia.

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Is our dear, good Editor's face red? He protests almost too vehemently that all his dear, Chemical Pets are fox terriers; but he sighs wistfully for the good old days when admirers used to send "Ye Ed" dressed poultry, mince pies, plum puddings and even an occasional basket of oranges for the joyous Christmas jubilee.

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We think of these as swiftly moving times, yet "We" find a very apt application today for thoughts expressed in an editorial in CHEMICAL INDUSTRIES exactly three years ago in our December 1934 issue:

"To date the President's leadership has inspired action—swift, bold action adopted, as he has frankly confessed, as experiments. Many of these have been prompted by mixed motives. Some of the experiments have been so contradictory as to cancel each other. Most of them have flatly repudiated the historical principles of the Democratic party, and several are highly repugnant to the ancient faiths of the Republic. Very few of these bold acts, however, give evidence of having been thought through to logical conclusions.

"No merit attaches to an experiment unless it reveals new knowledge, and the President must by now have learned much of practical value from experience. What is now needed is a plan which will embody the ideals of the New Deal worked out carefully upon the basis of the facts revealed by the trial and error methods of the past two years, and the President has a glorious chance at the moment to furnish a leadership in constructive thought which will capitalize not only his popularity, but also his program."

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"We" learn with dismay that there are more technicians than actors in Hollywood, which confirms our worst fears.

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Hats off to the Aluminum Company of America for its current series of newspaper ads with the good catch heading: "I didn't know THAT about Aluminum!" The block of the metal shown, with the price mark now 7c, reduced from $2.66, really visualizes the key-note of chemical progress.

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Don't miss reading Philip Gibbs' "Ordeal in England." He served on the British munitions inquiry board, and there's many a well written page of much more than casual interest to any chemical man in this highly interesting book.

Fifteen Years Ago

From our issues of December, 1922

J. Mahlon Buck becomes sales manager, Smith, Kline & French.

Eversley Childs resigns as head, Allied Chemical & Dye, and is succeeded by Chas. R. Smith, former vice president, General Chemical.

John Morris Weiss and Charles R. Downs form partnership, as consulting chemists and chemical engineers, under the name of Weiss & Downs.

Prof. L. A. Olney reelected president, American Ass'n Textile Chemists & Colorists.

Chemical Equipment Ass'n opens executive offices at 1328 B'way, New York City.

Shell Oil awards contract for refinery at Wilmington, Calif., to cost $6,500,000.

Du Pont stockholders approve increase of authorized common capital stock from $80,000,000 to $100,000,000.

C. C. Baird, Baird & McGuire, Holbrook, Mass., elected president, Insecticide & Disinfectant Mfrs. Ass'n.

Jos. Turner & Co. takes over business of J. L. & D. S. Riker, Inc.

Ready in January!

"Why Chemists Get Fired?" and "How to Get and Hold Technicians." Complete reprint of the opinions of industrialists and educators—16 pages—will be available in January after the publication of the final instalment: price 15c each—10 for $1—50 for $3, delivered.